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SECOND REPORT

OF

THE STATE BOARD OF HEALTH

COMPLIMENTS OF THE

STATE BOARD OF HEALTH

OF TENNESSEE.

MEMBERS.—J. D. PLUNKET, M. D., President, Nashville.

JAS. M. SAFFORD, M. D., Vice-President, Nashville.

HON. E. W. COLE, Nashville.

G. B. THORNTON, M. D., Memphis.

HON. D. P. HADDEN, Memphis.

P. D. SIMS, M. D., Chattanooga.

DANIEL F. WRIGHT, M. D., Clarksville.

J. BERRIEN LINDSLEY, M. D., Secretary and Executive Officer, Nashville.

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PUBLISHED BY AUTHORITY.

NASHVILLE:

ALBERT B. TAVEL, PRINTER TO THE STATE.

1885.

SECOND REPORT
OF
THE STATE BOARD OF HEALTH
OF THE
LAW LIBRARY
STATE OF TENNESSEE.

OCTOBER, 1880--DECEMBER, 1884.

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ALBERT B. TAVEL, PRINTER TO THE STATE.
1885.

YANKEE

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OFFICE OF THE STATE BOARD OF HEALTH,
NASHVILLE, TENN., Dec. 31, 1884.

To His Excellency, WILLIAM B. BATE, Governor of Tennessee :

SIR—In compliance with the requirements of the Rules and Regulations of the State Board of Health of Tennessee, I present to you the following Report of this Board, ending the first of January, 1885.

Very respectfully,

J. BERRIEN LINDSLEY, M.D.,
Secretary and Executive Officer of the Board.

RESOLUTION OF THE BOARD RELATIVE TO PAPERS PUBLISHED IN THIS REPORT.

Resolved, That no papers shall be published in the Report of the State Board of Health of Tennessee, except such as are approved by a majority of the members of the Committee on Publication; and that any paper herein published shall be over the signature of the author, who is entitled to the credit of the production, as well as responsible for its opinions and statements, and the Board shall be in nowise responsible therefor.

ORGANIZATION OF THE BOARD

1877—1878.

J. D. PLUNKET, M.D., President.

T. A. ATCHISON, M.D.,
JAMES M. SAFFORD, M.D.,
E. M. WIGHT, M.D.,
R. B. MAURY, M.D.

J. BERRIEN LINDSLEY, M.D., Secretary.

1879—1880.

J. D. PLUNKET, M.D.,
T. A. ATCHISON, M.D., } President.

JAMES M. SAFFORD, M.D.,
E. M. WIGHT, M.D.,
R. B. MAURY, M.D.,
G. B. THORNTON, M.D., }
HON. JOHN JOHNSON,
HON. E. W. COLE.

J. BERRIEN LINDSLEY, M.D., }
W. M. CLARK, M.D., } Secretary.

1881—1882.

T. A. ATCHISON, M.D., President.

J. D. PLUNKET, M.D.,
JAMES M. SAFFORD, M.D.,
G. B. THORNTON, M.D.,
E. M. WIGHT, M.D., }
P. D. SIMS, M.D., }
HON. JOHN JOHNSON,
HON. E. W. COLE.

W. M. CLARK, M.D., Secretary.

ORGANIZATION OF THE BOARD—*Continued.*

1883—1884.

T. A. ATCHISON, M.D.,
J. BERRIEN LINDSLEY, M.D., } President.
J. D. PLUNKET, M.D., }
JAMES M. SAFFORD, M.D.,
G. B. THORNTON, M.D.,
P. D. SIMS, M.D.,
DANIEL F. WRIGHT, M.D.,
HON. JOHN JOHNSON, }
HON. DAVID P. HADDEN, }
HON. E. W. COLE.

C. C. FITE, M.D.,
J. BERRIEN LINDSLEY, M.D., } Secretary.

ACT ESTABLISHING STATE BOARD OF HEALTH.

AN ACT to create a State Board of Health for better protection of life and health, and the prevention of the spread of diseases in the State of Tennessee.

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee,* That there is hereby created and established a State Board of Health, to be denominated "The State Board of Health of the State of Tennessee," and to be constituted as follows:

SEC. 2. *Be it further enacted,* That within twenty days after the passage of this Act, the Governor shall appoint five physicians of skill and experience, regular graduates of medicine, who have been engaged in practice not less than ten years—one from East Tennessee, three from Middle Tennessee, and one from West Tennessee. Three members of this Board, so appointed, shall constitute a quorum for the transaction of business at any regular, called, or adjourned meeting. All vacancies occurring by death, resignation, or otherwise, shall be filled by the Board, with the advice and consent of the Governor, and commissioned as hereinafter provided.

SEC. 3. *Be it further enacted,* That immediately, or as soon as expedient, after the appointment of said five physicians as aforesaid, they shall meet at the office of the Secretary of State, and having taken the oath prescribed for other State officers, the Secretary of State shall issue to each of said members of the aforesaid State Board of Health a certificate of appointment, upon receiving which they shall severally be and become members of the "State Board of Health of the State of Tennessee," and shall possess the power and perform the duties of said Board, as defined by this Act, and they shall hold their office respectively for the terms following, namely. One for one (1) year, one for two (2) years, one for three (3) years, one for four (4) years, and one for five (5) years, or until their successors are appointed and qualified. They shall next proceed under the direction of the Secretary of State, to determine by lot which of them shall hold their office for the respective terms of one, two, three, four and five years, which being determined, the Secretary of State shall enter upon their certificates of appointment

the term of office thus fixed upon each member. The term of office of members of the Board, after the expiration of the terms aforesaid, shall be five years.

SEC. 4. *Be it further enacted*, That immediately after determining the term of office, as hereinbefore provided, the Board shall proceed to organize, by electing one of their number President of the Board, and by electing a proper person, who shall be a regular physician of skill and experience, to be Secretary of said Board; and in case the Board shall elect one of their number Secretary, then, upon his acceptance of that position, there shall be a vacancy in the Board, which shall be filled as other vacancies are filled. The Secretary shall continue in office, as such, for a term of five years, unless removed by a majority of the whole Board, by the election of a successor or otherwise: and shall be the executive of said Board. He shall give bond, with security, in the sum of (\$10,000) ten thousand dollars, conditioned by the faithful performance of his duty, which bond, when accepted by the Board, shall be made of record with the proceedings of the Board, and placed on file with the Secretary of State. He shall keep his office at some central and convenient place in the State, and shall perform the duties prescribed by this Act or required by the Board.

SEC. 5. *Be it further enacted*, That the Secretary shall receive an annual salary, which shall be fixed by the Board, and the Board shall quarterly certify the amount due him, and on presentation of the certificate, the Comptroller shall draw his warrant upon the State Treasurer for the amount. The members shall receive no *per diem* compensation for their services, but their traveling and other necessary expenses, while employed in the business of the Board, shall be allowed and paid.

SEC. 6. *Be it further enacted*, That the State Board of Health shall have the general supervision of the interests of health and life of the citizens of this State. They shall especially study the vital statistics of this State, and endeavor to make intelligent and proper use of the records of sickness and death among the people. They shall make sanitary investigations and inquiries respecting the causes of disease, especially epidemics, the causes of death, effects of employments, habits, localities, and circumstances, upon the health of the people. They shall, when they deem it necessary, advise in reference to location, water supply, drainage, and ventilation of any public institution. They shall, from time to time, recommend works upon the subject of hygiene for the use of the schools of the State.

SEC. 7. *Be it further enacted*, That in order to afford this Board better advantages for obtaining knowledge important to be incorporated with that collected through special investigations and from other sources, it is hereby made obligatory upon every municipality throughout the State, having five thousand and over inhabitants, to organize, within sixty days after the passage of this Act, provided such municipalities have not already done so, a properly constituted Board of Health, which, in addition to their duties as such Local Boards, shall also make monthly, quarterly, semi-annual and annual reports to, and in accordance with such form and instructions, as said State Board of Health may prescribe, and also shall make special reports whenever required.

SEC. 8. *Be it further enacted*, That the Board shall meet quarterly at Nashville, and at such other places and times as they may deem expedient. A majority of the Board shall constitute a quorum. The Board may adopt rules and by-laws, subject to the provisions of this Act.

SEC. 9. *Be it further enacted*, That this Act take effect and be in full force from and after its passage, the public welfare requiring it.
Passed March 26, 1877.

HUGH M. McADOO,
Speaker of the Senate.

EDWIN T. TALIAFERRO,
Speaker of the House of Representatives.

Approved March 26, 1877.

JAMES D. PORTER, *Governor.*

I, C. N. Gibbs, Secretary of the State of Tennessee, do certify the foregoing to be a correct copy of an Act of the Fortieth General Assembly of Tennessee, the original of which is now on file in my office.

CHAS. N. GIBBS,
Secretary of State.

AN ACT to amend an Act to create a State Board of Health.

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That the Act approved March 26, 1877, entitled "An Act to create a State Board of Health," etc., be, and the same is hereby amended as follows:

SEC. 2. That the State Board of Health be, and they are hereby empowered to declare quarantine whenever, in their judgment, the welfare of the public requires it, and to prescribe such rules and regulations as they may deem proper for the prevention of the introduction of yellow fever, cholera, and other epidemic diseases into the State of Tennessee, and whenever the yellow fever, cholera, small-pox or other epidemic diseases, appear in any locality within the State, and information thereof is brought to the knowledge of said State Board of Health, they shall prepare and carry into effect such rules and regulations as in their judgment will, with the least inconvenience to commerce and travel, prevent the spread of the disease; they shall select suitable localities for establishing quarantine stations, and may erect necessary temporary buildings for the disinfection of passengers, baggage, cargoes, and other matters believed to convey the contagious principle of cholera, yellow fever, small-pox, and other epidemic diseases, and may enforce such transshipment of passengers as they may deem necessary, and shall assign to the charge of each station a competent physician and necessary assistants, who shall receive such compensation as the said Board of Health may deem reasonable and just, and the members of said Board shall be allowed a *per diem* compensation of not more than ten dollars, with traveling and other necessary expenses, for each and every day while actively employed in the business of said Board.

SEC. 3. *Be it further enacted,* That any person or persons who shall wilfully disregard or evade such quarantine as said Board of Health may declare, or violate any rule or regulation they shall make in attempting to prevent the spread of any epidemic disease, shall be guilty of a misdemeanor, and upon conviction shall be fined not less than fifty dollars, nor more than five hundred, or imprisoned in the county jail for a period of three months, one or both, at the discretion of the Court.

SEC. 4. *Be it further enacted,* That for the purpose of enabling the State Board of Health to accomplish the end for which it was created, the sum of three thousand dollars per annum is hereby appropriated, which amount the Comptroller of the Treasury is hereby directed to issue his warrant for, or any part thereof, first having the same duly certified by said Board.

SEC. 5. *Be it further enacted,* That the Governor shall have power, and it is hereby made his duty, to appoint two additional members of said Board, connected with the commerce and transportation of the country.

SEC. 6. *Be it further enacted,* That all laws and parts of laws

coming in conflict with this Act be, and the same are hereby repealed.

SEC. 7. *Be it further enacted*, That this Act take effect from and after its passage, the public welfare requiring it.

Passed March 24, 1879.

H. P. FOWLKES,
Speaker of the House of Representatives.

J. R. NEAL,
Speaker of the Senate.

Approved March 26, 1879.

ALBERT S. MARKS, *Governor.*

I, Charles N. Gibbs, Secretary of State of the State of Tennessee, certify that the above is a correct copy of an Act of the General Assembly of the State of Tennessee, the original of which is on file at my office.

CHARLES N. GIBBS,
Secretary of State.

REPORT OF THE SECRETARY.

In reviewing the origin and progress of Public Health legislation in Tennessee one is forcibly impressed with the weight and power for the public good exerted by individual effort long continued and persistent. To Dr. J. D. Plunket is justly due the honor of having initiated and carried to successful conclusion the measures which have resulted in giving Tennessee a high rank among those communities which have caught the inspiration of true democracy and scientific progress. Healthy homes for all the people is an idea resulting from science, sanctioned by Christianity, and to be made effective by legislation.

Leaving the halls of the University of Pennsylvania, the recognized fountain of medical science in America, in 1863, Dr. Plunket at once began his medical career as Assistant Surgeon in the C. S. A., at Knoxville University Hospital, and continued until the close of the war found him surgeon of the 52d Georgia regiment. Here he became impressed deeply with the truth and value of those scientific principles upon which is based the great modern movement popularly known as sanitary reform. Hence, in 1866, he became, by invitation of the city authorities, leader in the fight against Asiatic cholera, when it so severely troubled Nashville. Soon thereafter he became the mover in establishing the Nashville Board of Health, with the eminent professor Joseph Jones, M. D., as Health Officer, the first *bona fide*, decently paid official of this character in Tennessee. The grand cholera invasion of 1873, when two hundred towns and cities in the Mississippi valley paid tribute to the foreign invader, became a powerful

auxiliary to Dr. Plunket's efforts for public action in health matters. The city of Nashville, which with great stupidity had forgotten the lesson of 1866, again (1874) organized a Health Department and placed Dr. Plunket at its head. To-day the people of Nashville would much sooner think of doing without a Mayor than without a Health Officer.

Contemporary with these efforts in Nashville, Dr. Plunket steadily worked for State action, never losing an opportunity of impressing his ideas upon leading men, and specially by means of annual efforts at the sessions of the State Medical Society, keeping the creation of a State Board of Health prominently before the people. Incessantly he set others in action, purposely keeping himself in the background that his coadjutors might reap the greater honor. After abortive efforts with successive General Assemblies his dream became a reality, and in March, 1877, the Tennessee State Board of Health was created.

Those most intimately acquainted with the facts will agree that the long, faithful, disinterested, self-sacrificing and gratuitous labors of Dr. J. D. Plunket entitle him in Tennessee to the position held by Dr. H. I. Bowditch in Massachusetts and the late Dr. Elisha Harris in New York.

Having from the start watched with great interest these efforts in behalf of applying science to its grandest use, having as Health Officer of Nashville for four trying years been a practical worker in the field, and now after four years of entire devotion to quite a different work, having been called to my present difficult yet honorable position, I make the above record as matter of simple historic justice.

In entering upon a record of the past four years' work of the Tennessee State Board of Health two embarrassments confront me: First, a want of acquaintance with that work, owing to the fact that three and a half years of that period were filled by other executive officers. Second, the difficulty in selecting from a voluminous mass of minutes, reports and correspondence such material as will fairly repre-

sent the Board in its daily functions, and the generous co-operation it has received from the medical profession and other friends of sanitary progress in every portion of the State.

The best I can do in the very limited time necessarily allotted to this task is to give in the form of annals the most important portions of the above mentioned material. The public will thus be able to form its own judgment as to the character and value of a State Board of Health. In this manner also will appear the defects now impairing the efficiency of the Board.

When these deficiencies in means and in powers are considered, all will admire the patience of the Board in standing by the responsible duties committed to it by law. The record shows that the Members and Secretaries have been active, alert and vigilant. A comparison of what has occurred in neighboring communities during this period, will prove that Tennessee has been remarkably exempt from wide-spreading and costly epidemics. At present the principal field of duty for the Board is in the prevention of epidemics. In this field it has saved Tennessee many times over the moderate sum appropriated to its maintenance.

CHEMICAL AID.

At the meeting on October 5, 1880, the following letter was read :

" NASHVILLE, October 2, 1880.

W. M. CLARK, M. D., *Sec'y and Executive Officer State Board of Health, Nashville, Tenn.*

DEAR SIR —Your note in regard to my becoming Chemist for the State Board of Health is at hand. In reply I have to say that I will act in the capacity of Chemist to the Board in an official manner, and that without expense to the Board. However, if outside parties send articles for analysis to the Board, and they send them to me, I would expect to receive the usual compensation for such work.

Very respectfully,

N. T. LUPTON,

Prof. of Chemistry Vanderbilt University."

The State of Tennessee certainly owes thanks to Prof. Lupton for the above liberal offer, the sincerity and value of which have been fully shown by much gratuitous service rendered the Nashville Board of Health. However, a community so numerous and full of progress as is that with which we are now concerned should make such provision as would enable its State Board of Health to call upon the eminent scientists filling positions in the various institutions of learning to render assistance, not as a charity, but in all cases for reasonable compensation.

Tennessee is singularly fortunate in having been selected by leading churches as the site for great universities. Thus laboratories and libraries are established without cost to the State.

Now an efficient State Board of Health, in looking after the interest of the masses, constantly needs the aid of expert chemists, microscopists, pathologists, and others. The momentous questions of water supply, of healthy meat, of unadulterated foods and other points almost as vital, require the attention of highly skilled scientists for satisfactory solution. Yet not a dollar has been assigned for this purpose.

DR. E. M. WIGHT.

On January 8, 1881, the Board met in response to the call of the President, and the following report was adopted regarding the death of Dr. E. M. Wight, of Chattanooga :

"Dr. E. M. Wight was born in Bethel, Oxford county, Me., about 43 years ago, where he lived and practiced his profession until the breaking out of the late civil war. He entered the "Army of Tennessee" as a Surgeon in the Federal service, and served in that capacity until the close of the war, when he settled in Chattanooga. His talents and accomplishments, together with his urbanity of manners, soon brought him into prominence, and he was early recognized as one of the leading physicians of that place. In 1876-7 he served as Mayor of his adopted city, having been elected by the

Republican party, of which he was a member. It was while Mayor of Chattanooga that he received in a speech the large delegation of the "American Association for the Advancement of Science," and the broad, conservative views there expressed directed public attention to him in a special manner. The following year he was honored by his party in being nominated for Governor. This was in the summer of 1878.

Soon thereafter the great epidemic of yellow fever struck Chattanooga. Notwithstanding he could have left that devoted city with the most complete justification as the standard bearer of his party in the ensuing canvass, and thus escaped all the dangers and horrors of remaining, when staying meant death, he chose to perform his duty at every cost, rather than seek safety by absence. In this decision he exalted the claims of humanity above those of party or consideration of self, and though, withdrawn from the canvass, his party recognized his devotion, and gave him its full vote at the ballot box, thereby endorsing the heroism of the philanthropist. In April 1879, he was unanimously elected President of the Medical Association of Tennessee, and served as its presiding officer for one year. At the organization of the State Board of Health of Tennessee in 1877, he was appointed the representative in that body for the Eastern division of the State. It was in this connection that his peculiar and fine qualities were brought prominently before the public. He was active, efficient and capable and never hesitated to perform all duties confided to him in the clearest and most practical manner. His views were broad, comprehensive and liberal. His efforts in shaping its policy were constant and untiring. You see in almost every page of our proceedings evidence of his sagacity and industry. In addition to all this, Dr. Wight was a Christian gentleman. He was amiable, affable, and accommodating in his intercourse with his fellow men. He had a personal magnetism about him that, while it attracted friends, tended to conciliate opponents. His loss to this Board and to the community is great and almost irreparable. But our loss is small compared with that of his family, to whom he was devotedly attached. To them we can only tender the expression of our most sincere condolence, therefore:

Resolved, That the State Board of Health do hereby tender their heartfelt sympathies to his bereaved and stricken family.

Resolved, That a copy of these resolutions be sent to his family, be spread on the minutes and that they be furnished the papers for publication.

Resolved, That a memorial page be placed in the report of our State Board of Health consecrated to his memory.

MORTUARY REPORT.

At the meeting January 4, 1881, Dr. Thornton moved that the Secretary be instructed to procure from the Local Boards of Health a mortuary return, to be published in monthly bulletins by the Board, the form to be used being that last suggested by the National Board of Health. Adopted.

Hence the following circular was issued :

TENNESSEE STATE BOARD OF HEALTH,
NASHVILLE, January, 1881.

DEAR SIR:—It is the wish and intention of the State Board of Health, to issue from this office monthly "Mortuary Reports," compiled from statements sent here by the Secretaries of the various Local Boards of Health of Tennessee. For this purpose blanks will be sent out each month, to be filled and returned on the first day of the succeeding month.

While we cannot expect to be exact or complete at the beginning of this important work, we do hope the officers entrusted with the duty of filling the blanks, will send all the information in their power, that we may make as complete a report as possible. As time passes the opportunities will be better and our reports will grow in interest each month. To effect this, it would be well for the Secretary of each Board to call a meeting of the physicians of their respective towns and secure their co-operation, as without it there will be great difficulty in accomplishing anything. But few States fail to send out similar reports, and we hope sincerely this State will not fail in doing so.

The benefits of such a publication will be great and mutual to all physicians, and not only to them in knowing the health status of the State, but to persons contemplating immigration these reports will afford fine opportunities for selecting healthy localities for settlement.

Without punctuality in forwarding the monthly statements nothing can be accomplished, and therefore it is to be hoped each Secretary will mail his return on the first day of every month. We have in Tennessee fifty-five Boards of Health; certainly of this number we can issue a most respectable report, provided all will respond. Trusting they will do so,

I am, respectfully yours,

W. M. CLARK, M. D.,

Secretary and Executive Officer State Board of Health.

There being no law making such returns obligatory upon Local Boards, nothing seems to have resulted from the above effort.

SMALL-POX—A WARNING.

TENNESSEE STATE BOARD OF HEALTH,
NASHVILLE, Feb. 20, 1881.

To the Local Boards of Health of Tennessee and Official Correspondents of the State Board of Health:

The State Board of Health has just received a letter from Azel Ames, Jr., M. D., Secretary of the American Public Health Association, transmitting the following resolution, adopted by the Association and ordered to be transmitted to the various State Boards, that it might by them be brought to the notice of the State generally, and Local Boards especially

"WHEREAS, There are annually occurring in our large centers of population, and frequently in the provincial districts, numbers of cases of sickness and deaths from Smallpox; and,

"WHEREAS, The only certain method of restricting and preventing this loathsome disease is by vaccination and re-vaccination; therefore,

"Resolved, That the State Boards of Health of the several States in the Union, or where no State Boards exist, the State Medical Societies, be requested to take the matter under immediate advisement, and direct the attention of all Local Boards of Health to the great importance of seeing that all persons in their respective districts are properly protected by vaccination "

The State Board of Health earnestly commend the above to the consideration of all concerned.

Respectfully,
Sec'y and Ex. Officer State Board of Health for Tennessee,

W. M. CLARK, M. D.,

CO OPERATION WITH THE NATIONAL BOARD OF HEALTH.

At the meeting on August 6, 1881, on motion of Dr. Thornton, a set of resolutions was adopted, as embodied in the following circular:

TENNESSEE STATE BOARD OF HEALTH,
NASHVILLE, April 6, 1881.

WHEREAS, It is believed that public confidence was preserved and a sense of security engendered throughout the Mississippi Valley by the operations of the inspection service of the National Board of Health during the summer of 1880; and,

WHEREAS, It is desirable that such well-grounded confidence and security be perpetuated in the interest of commercial and material progress, as well as in "the interest of health and life of the citizens of this State," with the general supervision and protection of which this Board is charged by law; therefore,

Be it resolved, That the National Board of Health be, and it is hereby invited to co-operate with and aid the State Board of Health of Tennessee in the execution and enforcement of its rules and regulations to prevent the introduction of contagious or infectious diseases. ●

Resolved, That in view of the increased facilities of communication with the Gulf and South Atlantic ports, the National Board is respectfully requested to advise, promptly, this Board of Health of threatened danger from that source at any time, together with such suggestions connected therewith as it may be proper to make.

Resolved, That this Board formally approves and endorses the action of the Board of Health of the city of Memphis, as set forth in the following resolutions, adopted at a special meeting held on the 29th day of March, 1881, as follows:

"*Resolved*, That the National Board of Health be respectfully requested to place on duty at New Orleans, and such other Southern ports as may be deemed necessary, an inspector or inspectors, whose duty it shall be to supervise the shipment by river or rail of all goods, merchandise, baggage, etc., and to advise (by cypher telegram) the resident member of the National Board of Health in this city, or, in the event of his absence, his official representative, whenever such shipments are believed to be infected, or in anywise dangerous to public health; and that the National Board instruct its resident member to promptly inform this Board of the shipment of such infected or dangerous goods, etc., to this city.

"*Resolved*, That the quarantine grounds and buildings on President's island be again tendered to the National Board of Health for use as an inspection station for the enforcement of the quarantine ordinance of the Taxing District, which takes effect May 1, prox., and for the general purposes of the inspection service of the National Board.

Resolved, That copies of these resolutions and quarantine ordinance be transmitted to the Secretary of the National Board of Health in Washington."

Resolved That the Secretary be and is hereby instructed to furnish a copy of above resolutions to the Secretary of the National Board of Health, and the Boards of Health and Sanitary Council of the Mississippi Valley.

Attest:

W. M. CLARK, M. D.,
Secretary State Board of Tennessee.

SANITARY PROPOSITIONS.

At the meeting August 6, 1881, Dr. Thornton, Chairman of Committee on Epidemic and Endemic Diseases, presented a circular to be issued by the Secretary, which appeared as "Circular No. 12:"

Sanitary Propositions suggested to Local Boards of Health by the State Board of Health of Tennessee.

To facilitate and make more effective the work of Local Boards of Health and so far as practicable, secure uniformity of requirements and results, the following propositions are respectfully offered by the State Board of Health as fundamental sanitary principles upon which to base local health ordinances and regulations. This Board will co-operate with Local Boards in every way possible, and earnestly urge upon such organizations the necessity for prompt and efficient action in thus promoting this end, that in our State with all its natural advantages, the aims of Sanitary Science may be fully realized to its every inhabitant—that is, in the words of the late Dr. Parks "growth may be made more perfect, decay less rapid, life more vigorous, and death more remote."

PROPOSITION I.

CONCERNING GENERAL SANITARY MEASURES.

A sanitary survey of the territory under the jurisdiction of each Local Board should be made at least annually in practicable forms of schedule for such surveys will be furnished upon application and when completed and filed with the Secretary will be published in the Annual Reports of the State Board from time to time. In addition to the general sanitary survey there should be made a sanitary description of each domicile and its surroundings and this

record should be kept open for the inspection and information of all renters and other interested persons.

The following rules have been adopted by similar organizations elsewhere, and are here presented for the convenience of secretaries of Local Boards of Health in compiling like regulations:

RULE 1.—No privy vault, cesspool, or reservoir, into which a privy, water-closet, stable, or sink is drained, except it be water-tight, should be established or permitted within a hundred feet of any well, spring, or other source of water used for drinking or culinary purposes.

REASON:—Soil, especially if it be sandy loam, gravel, or clay, with inclined strata or layers, is often an unsuspected conductor of the liquid contents of such receptacles to wells or springs of water. Many authenticated cases of typhoid fever, and other dangerous and often fatal diseases have been traced to the use of water so contaminated.

RULE 2.—Earth privies, or earth closets, with no vault below the surface of the ground, shall be excepted in Rule 1, but sufficient dry earth or cold ashes should be used daily to absorb all the fluid parts of the deposit, and the entire contents should be removed monthly.

REASON:—Dry earth or cold ashes are nearly complete disinfectants, if used in sufficient quantities to absorb all the fluids.

RULE 3.—All privy vaults, cesspools, or reservoirs named in Rule 1 should be cleaned out at least once a year, and from the first of May to the first of November of each year should be thoroughly disinfected, by adding to the contents of the vault twice every month two to four pounds of copperas, dissolved in a pailful of water.

REASON:—During the hot season putrescent gases are given off from the decomposing excreta in such vaults. These gases are not only very offensive, but are often the cause of very dangerous diseases. They contain compounds of ammonia, which are decomposed by a solution of copperas, and the foul odor destroyed. In a family vault, two pounds of copperas a month is usually sufficient. In vaults used by a large number of persons, five to ten pounds of copperas should be used semi-monthly.

RULE 4.—No privy or cesspool should open into any stream, ditch or drain, except common sewers.

REASON:—Same as for Rule 1.

RULE 5.—Within the limits of any town, no night soil or contents of cesspools should be removed, unless previously deodorized by mixing with solution of copperas, and, during removal, the material

should be covered with a layer of fresh earth, except the removal is effected by the "odorless excavating process."

REASON —Same as for Rule 3.

RULE 6—All sewer drains that pass within fifty feet of any source of water used for drinking or culinary purposes should be water-tight.

REASON —The danger of contaminating the water.

RULE 7.—All house offal, dead animals, or refuse of any kind should be buried, and all putrid and decaying animal or vegetable matters should be removed from all cellars and out-buildings on or before May 1st of each year.

RULE 8—No animal affected with an infectious or contagious disease should be brought or kept within the limits of the jurisdiction of the Board, except by permission of the Local Board of Health. No diseased animal or its flesh, and no decayed, diseased, or unfit meat, fish, vegetables, or fruit, or diseased, impure or adulterated milk, or other articles, should be sold or offered for sale as food.

PROPOSITION II.

CONCERNING VITAL STATISTICS.

1st. The faithful execution of the law entitled "An Act to provide for the registration of births, marriages, and deaths in Tennessee, approved April 5, 1881," a copy of which is herewith enclosed which, under section 7 of said act, can be so amended by municipal authority as to comprehend greater detail than is here provided for, which, in the opinion of this Board is very desirable where it applies to centers of population, and should, in every instance, be done.

2nd. Before removal or interment of a dead body, certificates of death, embracing points enumerated in section 5 of above referred to act, should be required of attending physician or if there be none in attendance, of some responsible person cognizant of the facts or if suspicious circumstances exist as to the cause of death, the coroner, which certificate the undertaker should be required to file within twenty-four (24) hours after such burial or removal with the Secretary of the Local Board of Health, to be by him registered in a book and filed for safe keeping among the archives of the Board.

PROPOSITION III.

CONCERNING SPECIFIC PREVENTIVE MEASURES.

1. Every child should be vaccinated before two years of age, and this Board recommends that all persons be revaccinated as often as

once in five years; that no child, teacher, attendant or employe be admitted to any school or other institution of learning without presenting satisfactory evidence of such vaccination; and that all prisoners, paupers, and other inmates of public institutions, be vaccinated upon admission thereto.

2. Any householder in whose dwelling there shall occur a case of cholera, yellow fever, scarlet fever, typhoid fever, diphtheria, or small-pox, should be required, under such penalty as may be prescribed by local authorities, to immediately notify the Local Board of Health of the same.

3. No person sick with any of the diseases above enumerated, nor any clothing, or other article that may have been exposed thereto, should be removed except by permission and under the direction of the Local Board.

4. Persons so affected, and all articles infected by the same, should be immediately separated from all persons liable to contract or communicate the disease, and none but those absolutely necessary should be allowed access to persons sick with these diseases.

5. Persons recovering from any of the diseases specified in the preceding, and their nurses, should not leave the premises until they have been thoroughly bathed, and their clothing disinfected by washing in boiling water, or by heating to 250° Fahrenheit.

6. All personal clothing, bedding, towels, etc., and all articles in contact with or used by the patients should be washed in boiling water, or exposed to a temperature of 250° Fahrenheit.

7. Infected feather beds, pillows, and hair mattresses should have their contents removed and disinfected by thoroughly exposing them to the fumes of burning sulphur, and their ticks washed in boiling water. Infected straw beds and excelsior mattresses should have their contents removed and burned, and their ticks washed in boiling water.

PROPOSITION IV.

CONCERNING INFECTIOUS OR CONTAGIOUS DISEASES.

Physicians or other attendants upon cases of infectious or contagious diseases, or suspicious cases of this class, should, in like manner, be required to report their existence as early as practicable, that proper record may be made and restrictive measures instituted.

The following rules, previously issued from this Board, for the restriction and prevention of scarlet fever, are applicable *mutatis mutandis* to measles, diphtheria, small-pox and yellow fever:

1. Put a rigid quarantine upon the sick for a period of at least three weeks, even if the disease exists in the mildest form; and

during this period exclude all persons from the patient's room who are not necessarily in attendance there; secure, without sensible currents or drafts, a continual change of the air of the sick room.

2. The clothing and bed clothing used by the patient should be disinfected by soaking in a weak solution of chlorinated soda before their removal from the room, and subsequently they should be thoroughly boiled.

3. The discharges of the sick should be received in vessels containing a solution of sulphate of iron or copperas (in the proportion of about three pounds of copperas to one gallon of water), and should be *at once buried, and not thrown into the privy or water closet.*

4. Those in attendance upon the sick should not mingle with other members of the household who are liable to have the disease, and the parties so exposed should repeatedly rinse the mouth and gargle the throat with some mild astringent.

5. In case of death by scarlet fever the funeral notice should state the fact, and *the funeral should be a strictly private one.*

6. Members of any household where scarlet fever exists, whether mild or malignant, should refrain from mingling with children in schools, churches, Sunday-schools, or other indoor places, and association with adults should be restricted as much as possible.

7. A person convalescent from scarlet fever must be considered dangerous as long as scaling of the skin continues, or any symptoms of dropsy remain, and such person should not appear in public, after all symptoms have disappeared, until he has taken a full bath three or four times, at intervals of two days. His clothing, if worn at all during his sickness, should also be thoroughly disinfected.

8. All articles of clothing in use by any of the sick, and all articles of furniture used in the sick room, should be thoroughly disinfected. Boiling is the best means of disinfecting clothing, and for the disinfection of furniture, it should be subjected for eight or ten hours to dense fumes of burning sulphur in a close room. The room which has been occupied by a scarlet fever patient should be newly painted and papered, or kalsomined. Any article which cannot be disinfected should be burned.

PROPOSITION V.

CONCERNING HEALTH REGULATIONS FOR SCHOOLS, PUBLIC AND PRIVATE.

1. No pupil should be allowed to attend school who has not been successfully vaccinated, or in whom non-susceptibility has been demonstrated.

2. School premises, rooms, halls, passages, grounds, and out-buildings should be kept scrupulously clean and in good order.

3. Recitation and study rooms should be kept *well ventilated*, and a uniform temperature, as near 70° Fahrenheit as possible, should be maintained.

4. Cleanliness of person and clothing of pupils should be exacted. The dress can be clean no matter how cheap or worn.

5. Neither pupils nor teachers should be allowed to enter a school building while small-pox, measles, scarlet fever, or diphtheria exists in the house or place of residence of such pupils or teachers.

6. When small-pox, scarlet fever, measles, or diphtheria has existed in the family of a pupil, such pupil should not be allowed to resume attendance until the attending physician furnishes a written statement that it is safe and prudent to admit such attendance.

7. Over-crowding the school room is a most fruitful source of disease, insubordination and stupidity. Every pupil should have not less than one thousand cubic feet of air space, and this should be changed at least once per hour by proper means of ventilation.

DEAD BODIES—INFECTED GOODS.

At the meeting on January 6, 1882, the Committee on Epidemics presented to the Board the following circular:

To Public Carriers:

Small-pox being reported prevailing in several of the leading cities of the country, and recently having developed in two localities in Tennessee, through the agency of persons coming from other States, in order to prevent the spread of the disease, the State Board of Health orders:

1. That no person suspected of small-pox in any of its forms shall be allowed to travel on railroads, water-ways, or other means of public conveyance in the State, and all common carriers are hereby interdicted from transporting any such person.

2. That no corpse having died of small-pox or other infectious disease, shall be transported under fifteen months after death, and then only with a temperature of 32° or under, and upon a certificate of the Health Officer at the place of disinterment, or re-interment, if any there be.

3. That no goods or chattels, or merchandise, or wearing apparel, belonging or pertaining to any person infected with small-pox, or which may have been exposed to such infection, shall be received

on board of any train, steamboat, barge, or other public conveyance, for transportation to any point within the State or elsewhere

4. No passenger, or goods of any description, shall be received by any line of public carriers for transportation without the certificate of an inspector recognized by the Board, if there is any reason to believe that such passenger or goods have been exposed to infection.

5. All persons in the employ of any lines of transportation should be at once vaccinated or re-vaccinated. We urge that this order be mandatory by such public carriers.

The circular was adopted, and the Secretary instructed to have 300 copies printed and distributed immediately, and made public by being exposed at the different depots.

The great railroad corporations are now alive to the importance of the points brought out in the above circular. The following shows their mode of acting:

CHICAGO, ROCK ISLAND & PACIFIC RAILWAY,
OFFICE OF SURGEON-IN CHIEF,
DAVENPORT, IA., Jan. 1, 1884.

Rules for the Guidance of Station Agents and Baggage men in Receiving and Transporting Dead Bodies

RULE 1. The transportation of the bodies of persons dead of small-pox, Asiatic cholera, or yellow fever, is absolutely forbidden.

RULE 2 From November 15th to March 15th, all other dead bodies may be transported without restriction, except that those dead of diphtheria, scarlet fever, typhus or typhoid fever, in addition to being in a metallic or wooden coffin, and thus enclosed by a light wooden box, must be closely wrapped in a carbulated cerecloth, or some equally effective substitute

RULE 3 From March 15th to November 15th, all bodies presented for transportation must be prepared as described in the latter part of Rule 2.

RULE 4 Every dead body must be accompanied by a physician's certificate of death, and a written certificate from the shipping undertaker that the corpse has been prepared for transportation in accordance with the rules of the Iowa State Board of Health.

FORM OF CERTIFICATE REQUIRED BY STATE BOARDS OF HEALTH.

Physician's Certificate of Death.

_____, 188-.

Name of deceased, _____; date of death, _____

188—; age, — years, — months, — days; place of death, —; cause of death, —.

I hereby certify that the above is true to the best of my knowledge and belief. —, M. D.

Residence of certifying physician, —; county of —.

Undertaker's or Shipper's Certificate.

—, 188—.

— hereby certify that the dead body of — (if minor give parents' names), named in the foregoing physician's certificate, has been prepared by — for transportation in accordance with the rules of the State Board of Health.

— Undertaker.

Residence of undertaker, —.

In seeing that the above instructions are strictly enforced, you are to understand that the intention is that no dead body shall be received which may be the means of spreading disease. Therefore, in receiving any corpse which originates in its primary shipment from within the States of Iowa, Illinois and Missouri, the rules of the State Boards of Health governing such shipments must be observed.

All dead bodies presented by connecting lines and coming from beyond the States mentioned, need only to be accompanied by a physician's certificate, which must plainly state that the disease of which the person died was not of a contagious character.

A. KIMBALL,

Vice-President and Gen'l Sup't.

J. D. MARSTON,

General Baggage Agent.

W. F. PECK,

Surgeon-in-Chief.

DR. P. D. SIMS.

At the meeting on April 5, 1881, Dr. P. D. Sims, of Chattanooga, was unanimously nominated to fill the vacancy occasioned by the death of Dr. Wight. The nomination was confirmed by Governor Alvin Hawkins, on May 10.

QUARANTINE CLASSIFICATION OF FREIGHT.

At a meeting on May 11, 1881, it was

Resolved, That this Board freely concur in the action taken by the Sanitary Council of the Mississippi Valley in adopting the "Report of the Committee of Eleven, and memorandum for a classification of articles of merchandise for quarantine purposes," at its meeting at Evansville, April 21, 1881, and we hereby re-adopt the same, so far as it may apply to Tennessee.

Said classification is as follows :

SANITARY COUNCIL OF THE MISSISSIPPI VALLEY,
OFFICE OF THE SECRETARY, April 21, 1881.

At the session of the SANITARY COUNCIL OF THE MISSISSIPPI VALLEY held this day in the city of Evansville, Ind., the Secretary of the Council was instructed to have printed for the information of transportation companies, the classification of articles of merchandise for quarantine purposes as adopted by the Council.

The preparation of this classification was undertaken at the request of the river and rail transportation companies, with a view to securing protection alike to shippers and the companies during the existence of a yellow fever epidemic, by having an authoritative declaration of articles of freight considered dangerous as contagion-carriers, and which declaration may furnish the basis of uniform rules for health boards and quarantine authorities.

As a result of its deliberations, the Council unanimously adopted the following —

MEMORANDUM FOR A CLASSIFICATION OF ARTICLES OF MERCHANDISE FOR QUARANTINE PURPOSES.

In the following suggestions for a classification of articles of merchandise for quarantine purposes during the existence of epidemic yellow fever, it is assumed that this disease is "due to a specific particulate cause which is capable of growth and reproduction," and which is transportable, not only by adhesion to surfaces, but *in the air from an infected locality*.

"It is also prudent to assume that the growth and reproduction of this cause [i. e., the yellow fever poison] is connected with the presence of filth in the sanitary sense of that word, including decaying organic matters and defective ventilation."—*Circular No. 5 National Board of Health July 12, 1879.*

It follows from the first assumption, that closed vehicles, compartments or receptacles, and articles or masses of material capable of retaining air motionless in meshes, folds, webs or interstices, are

dangerous as contagion-carriers in proportion as their character, use or structure prevents or retards aeration, and from the second assumption, in proportion as such articles or materials furnish organic matter liable to decay. Hence, an empty box car or the unventilated hold of a vessel in ballast may be the means of introducing the poison by transporting infected atmosphere, while goods from the same locality might be innocuous if thoroughly exposed to the open air during transit.

Two practical deductions from the foregoing premises are:

First. Box or close freight cars should not be allowed to leave an infected locality until after special treatment. Such treatment should embrace:

(a.) The thorough cleansing and washing of the interior of the car by means of a hose or in some similar drenching manner.

(b.) Its immediate disinfection (while still wet) by burning sulphur—eighteen ounces to each 1,000 cubic feet of space—all openings to be closed as perfectly as possible for at least six hours.

(c.) Its removal within ten hours after beginning the sulphur combustion, *and before being opened*, to a point at least five miles from the infected locality, at which point it should be opened and thoroughly ventilated by a fire in each end for the space of six hours, or by the forced injection of pure air by means of a fan blast and flexible hose.*

It would be better, however, to absolutely prohibit the removal of a box car from an infected locality, except in the case of through shipments beyond the region where yellow fever may become epidemic.

For the same reasons, the transportation from an infected locality, of goods of any description, in the closed hold or unventilated cargo-box of a steamboat, barge, or other water-craft, should be prohibited, and no boat, barge, or other water-craft should be permitted to depart from an infected port without ample and efficient ventilation of all compartments during the voyage or trip.

Second. Articles not believed capable in themselves of conveying contagion, may be made dangerous by the character of their packing. A chemically clean article, if packed with sawdust, straw,

* This seems to be the only available method of securing a complete change of air in the ends of box cars as at present constructed. If they were provided with doors in the ends, opening from roof to floor, they could be readily ventilated without fire. Horizontal shutters one foot deep and extending across the car from side to side—one opening down to the floor, one up to the roof, one midway between—would probably answer every purpose. If ventilated by heat, the stoves should be placed as near the ends as safety from fire will permit, it is the few feet of dead air in these localities which is dangerous, and which requires to be displaced.

cork-paper, or similar material in an infected atmosphere, may be the means of infecting the individual who opens the package. Not only this, but there is reason to believe that contagion has been carried from an infected locality in boxes, barrels, and similar receptacles, simply by means of the contained air. Original packages of goods which have been stored in an infected locality are dangerous in proportion as their packings or envelopes allow access of the infected air to the contents. Thus, bottled liquids in wicker baskets or hampers; canned goods in crates or slat boxes; earthenware, crockery, etc., in loose-jointed barrels, casks or open crates; textile fabrics in bagging or sacking, etc., would be dangerous, when the same goods in tight wooden boxes, barrels or casks, or in metal cans or cases would not be dangerous, or only remotely so.

SCHEDULE OF ARTICLES DECLARED CONTRABAND OF QUARANTINE.

With the foregoing explanation the following list of articles is submitted, with the recommendation of the Sanitary Council of the Mississippi Valley, that they be declared contraband of quarantine, in the belief that they are dangerous as contagion-carriers, and their removal from a place infected with yellow-fever to any other point where yellow fever may become epidemic, should be prohibited. This recommendation does not, however, extend to freight packed in close receptacles or vehicles for through shipment to points outside the epidemic region of yellow-fever.

Articles of every description packed in wool, cotton, hemp, flax, jute, straw, sawdust or similar material.

Bellows.

Bran.

Broom corn.

Boats, barges and other water-craft, unless clean and well ventilated.

Boxes, empty.

Churns.

Cocoa matting, or other fabrics of cocoa.

Cotton, loose.

Cotton fabrics.

Cotton seed and waste of any kind.

Excelsior.

Feathers.

Felting.

Fertilizers

Flax or flax fabrics.

Fodder.
Fruits, fresh or dried,
Furniture, upholstered.
Game, dressed.
Grain.
Grass mats.
Hair and hair fabrics.
Hay.
Hemp and hemp fabrics.
Hides.
Hops.
Horns, hoofs, and other animal remains.
Jute in any form.
Kraut.
Leather.
Mail matter (unless subjected to disinfection.)
Manure, marl and earth.
Matting, cotton, hemp, straw or wool.
Mattresses.
Meats, fresh.
Merchandise of any description so packed as to retain air from an infected locality.
Moss.
Oil cake.
Paper.
Personal baggage (unless subjected to disinfection.)
Poultry, dressed.
Rags.
Railroad cars, upholstered, box or close freight.
Ramie plants and roots, packed.
Roofing, felt.
Saddles, stuffed.
Seeds of all kinds.
Shorts.
Skins of all kinds.
Soap stock.
Tarpaulins.
Tents and fixtures.
Trunks.
Valises.
Vegetables, loose or packed.
Vehicles, upholstered.
Wadding.

Wagons, (children's) upholstered.
Wool and wool fabrics.
Yarns, cotton or wool.

Official:

J. H. RAUCH, M. D.,
Secretary of the Council.

DR. J. M. SAFFORD.

At the meeting April 4, 1882, Dr. Safford was unanimously nominated to fill the vacancy created by the expiration of his term, which began in April, 1877.

NATIONAL BOARD AND QUARANTINE.

At the meeting April 5, 1882, Dr. Thornton addressed the Board on the subject of quarantine and inspection at Memphis during the following summer, whereupon Mr. Johnson offered the following resolutions, which were adopted, and the Secretary instructed to forward to the Secretary of the National Board:

This Board, recognizing the protection to the health of the people of the Mississippi Valley, and especially to the people of Tennessee, by the quarantine and inspection service of the National Board of Health, during the last two summers, and appreciating the importance of the re-establishing the same quarantine and inspection service for the summer and fall of 1882—

Resolved, That the National Board of Health be respectfully requested to place on duty at New Orleans, and such other Southern ports as may be deemed necessary, an inspector or inspectors, whose duty it shall be to supervise the shipment, by river or rail, of all goods, merchandise, baggage, etc., and to advise the Secretary of this Board whenever such shipments are believed to be infected or in anywise dangerous to the public health.

Resolved, That a copy of this preamble and resolution be forwarded to the Secretary of the National Board of Health at Washington, D. C., with the request that service be established not later than May 1st, proximo.

SMALL-POX—DAVIDSON COUNTY PEST-HOUSE.

At the meeting on July 5, 1882, Drs. Thornton and Safford, committee on the Epidemic clause of the Secretary's report, offered the following resolutions, which were adopted:

Your committee, to whom was referred the Epidemic section of the Secretary's report, beg leave to submit the following report:

Resolved, That the Secretary be instructed, whenever it comes to his knowledge that small-pox exists in any county in the State, to inform himself as to what provision is taken to guard against it and protect the community from its infliction; that, if necessary to obtain reliable information, he shall visit the locality in person, and in the event the proper authorities have failed to take such steps as are necessary, or shall refuse to do so after being duly notified, the Secretary shall take such steps as are necessary to require the Chairman of the County Court to comply with Sections 1729-32, Code of Tennessee (Thompson & Steger's).

Resolved, That as the Davidson county pest-house has been recently inspected by the Secretary of this Board, and found inadequate to its purposes in many respects, chiefly as to its unsanitary location, its deficiencies in architectural construction and general dilapidated condition, as well as its want of appliances and facilities for the proper comfort and well being of its inmates, and a general incompetent and grossly negligent administration of the institution, the Secretary be instructed to make these facts known to the Chairman of the Davidson County Court, and in the event he fails to take such steps, with all due diligence, to effect all needed reforms, both for the proper comfort of the inmates and to prevent the hospital from becoming a focus of infection, that he be instructed to proceed against said Chairman under the above named statutes, and, if necessary, to present him to the Grand Jury of Davidson county, at its next session, for permitting a public charity to become a public nuisance.

NATIONAL BOARD.

At the meeting July 5, 1882, the Committee on the Legislative Section (of Secretary's report), Dr. Plunket and Col. Cole, presented the following report:

GENTLEMEN —Your Committee, to whom was referred the portion of the Secretary's report which embraces the correspondence in which the National Board of Health suggests the possibility of its being unable to render for the future that pecuniary aid necessary in the event that pestilence comes or danger threatens, if the provisions of the Sundry Civil Service appropriation bill now before Congress be enacted into a law, would respectfully report that, notwithstanding the manly reply of His Excellency, Governor Hawkins, when asked if Tennessee would furnish the money necessary if the Government did not, in the event of an epidemic in our State, viz. : "The expenditure of a sum of money out of the State Treasury would not lay in the way of protection," notwithstanding this noble assurance of assistance, if necessity requires, your Committee are impressed with the fact that should Congress fail to make a liberal appropriation of funds for use through the National Board of Health, in aiding all State and Local Boards of Health in times of general distress, that great embarrassment must follow to the public in consequence of the curtailment of the efficiency of such State and Local Health Departments from want of ample means. To the end, therefore, of inducing Congress, so far as this Board may do, your Committee suggest that the following preamble and resolutions be adopted as a memorial to Congress, urging the importance of their being generous in providing for emergencies which were national in their effects, and which having occurred, warrant us in the belief that they may occur again:

WHEREAS, in 1878, the most disastrous epidemic that ever visited Tennessee swept through the State, destroying thousands of human lives, and millions of money, in paralyzing enterprise, obstructing travel, deranging commerce; and,

WHEREAS, in 1879, the pestilence revived and threatened a repetition of the experiences of the summer preceding, and only then was it through Federal money that the Tennessee State Board of Health was enabled to restrict its ravages by confining it, as they did practically, to the corporate limits of Memphis, therefore be it

Resolved, That it is the sense of this Board that money is the prime essential in preventing and suppressing epidemic diseases, and to that end the Congress of the United States is hereby memorialized to make available a fund of not less than five hundred thousand dollars, to be used by the National Board of Health, in aiding State and Local Boards of Health in enforcing their rules and regulations to prevent the introduction and spread of contagious and infectious diseases into and within the United States

Resolved, That the Secretary be, and is hereby directed to mail

at once a copy of these resolutions to each of our Senators and Representatives to Congress, and to the National Board of Health.

All of which is respectfully submitted.

[Signed.]

J. D. PLUNKET,
E. W. COLE,
Committee.

July 5, 1882.

THE PENITENTIARY.

At the meeting on October 3, 1882, Dr. Plunket moved that the Committee on Charities and Prisons be requested to invite the Commissioners on the removal of the Penitentiary, the Mayor, City Council, City Board of Health, and the Citizens' Committee on removal of the Penitentiary, to meet them in council at the rooms of the Board.

Motion adopted, and the Secretary was instructed to notify the parties to meet at the office of the Board tomorrow morning at 9 o'clock.

At the meeting, October 4, 1882, the State Board met pursuant to adjournment, with the following members present: Dr. T. A. Atchison, President; Dr. G. B. Thornton, Dr. J. M. Safford, Dr. P. D. Sims, Dr. J. D. Plunket and the Hon. John Johnson.

The gentlemen invited to be present were Hon. W. Y. Eliotte, Judge Randolph and Mr. Gossett, Commissioners on removal of Penitentiary, Dr. Maddin, President of the Nashville Board of Health, Dr. R. Cheatham, Health Officer, Dr. Roberts, Secretary Nashville Board of Health, and Dr. Hollowell, member of said Board; Dr. Crawford, Superintendent of Public Instruction; Dr. Hawkins, Commissioner of Agriculture, Statistics, Mines and Immigration; Judge Baxter, Judge Robert Morris, of the Citizens' Committee, and Col. Cole.

The President, Dr. Atchison, stated the object of the meeting to be a consultation as to the propriety and feasibility of the removal of the Penitentiary.

Addresses were made by the members present, and after a full interchange of views between those present, the Board adjourned for dinner.

The State Board of Health met at 4 o'clock, P.M. Present, same as reported in the morning session.

On the subject of the removal of the Penitentiary, the following preamble and resolution were adopted:

WHEREAS, The State Board of Health of Tennessee are of the opinion that the State Penitentiary should be removed from its present site, and a new one erected elsewhere, for the following reasons:

1st The present building is inadequate to the comfort and custody of the prison population.

2d It is badly constructed, and is therefore detrimental to the health of the prisoners in a degree nothing short of cruelty.

3d. The ground space is insufficient for the erection of suitable buildings with the necessary workshops.

4th Its present location is a nuisance to the public health, a check to prosperity, and an incubus upon the community in which it is situated

5th The value of the ground and building materials will fetch, if sold at public outcry, a sum sufficient to defray a large proportion of the cost of a suitable structure elsewhere; therefore be it

Resolved, That in a sanitary and in an economic point of view, it is, in the opinion of this Board alike the duty and interest of the State to inaugurate, at once, measures for the removal of the same.

DR. W. M. CLARK.

On October 4, 1882, the Secretary, Dr. Clark, presented his resignation, to take effect January 1, 1883. Dr. Clark had wished to retire when his term expired in April, 1882,

but the Board insisted upon his remaining in office. Ill health and pressure of literary work, caused him now to insist upon retiring from a position in which the responsibility was very heavy and the compensation very light.

The first report of this Board, an octavo of 550 pages, will remain an enduring monument of Dr. Clark's able and faithful services. He won the esteem and kind wishes of all who served with him, and made friends for the Board and its work wherever duty called him.

DR. C. C. FITE.

Same date as above, the Board unanimously elected Dr. C. C. Fite, of Shelbyville, to fill the position of Secretary and Executive Officer, when made vacant by Dr. Clark's retirement. This was the more complimentary to so young a member of the profession inasmuch as a number of names had been suggested to the Board, owing to the fact that Dr. Clark's determination to retire was generally known. The efficient work done as Health Officer in Shelbyville, in 1879-80, had attracted the attention of sanitarians to Dr. Fite very widely, and doubtless had due weight in determining the action of the Board. As Secretary of the State Medical Society, Dr. Fite had made many valuable friends, whose co operation was no small help in his work as Secretary.

On May 29, 1884, Dr. Fite presented his resignation, to take effect July 1, as will appear hereafter. On that occasion remarks were made by members as follows:

Dr. Plunket said that the resignation was quite a surprise to him, but he was fully aware that the office did interfere seriously with practice, and it would require more and more time, hence he must admit the step was a reasonable one, and however much we may regret it, the Secretary's conclusions were undoubtedly correct.

Dr. Lindsley said it was evident that the Secretary was right if he desired to do a full practice. He had been a personal friend of Dr. Fite for years, and he had originally advised him that the office would so interfere with his professional duties that it should be accepted only as a temporary position.

Dr. Sims said it was to be regretted that the Board would have to lose the valuable services of Dr. Fite, and it was with great reluctance that we give him up, but, of course, his reasons are good ones, and cannot be gainsaid.

Col. Cole said that he desired to express his regret at the resignation of Dr. Fite. He is a man of great energy and ability, and in the discharge of his duties, has given great satisfaction to the Board and to the State. He has discharged the duties of the office with signal ability, but, in view of his eminent qualifications for his chosen profession, I could not, as his personal friend, try to persuade him to withdraw his resignation, for his reasons are cogent. With his ability, energy and youth, he cannot afford to neglect his profession for this office, and in parting from him with regret, we may predict a brilliant future for him. On our account I deeply regret the severance.

Dr. Safford said: "Col. Cole has said just what was in my mind. I have long had a pleasant acquaintance with Dr. Fite, and have admired the way in which he meets his duties. It is with regret I see him leave us in this work, but it is wiser for him, and for his good, to take the step he has."

QUARTERLY SESSION, JANUARY, 1883.

JANUARY 3, 1883.

The State Board of Health met at the office of the Secretary, in the Capitol, at 10:30 A. M., T. A. Atchison in the chair.

The Secretary, C. C. Fite, presented the following report for the Committee:

"The Committee on Epidemic Diseases met at the Maxwell House last night at 8 o'clock. Dr. Richard Cheatham, Health Officer of Nashville, appeared before the Committee by invitation to give a sketch of his methods of managing small-pox. He said there were four cases only in the city at present, and forty-one in the hospital. There were fifty guards on duty to watch infected houses. All families quarantined are fed by the city, if they so desire. The city bears the expense of those who remain in the city. All cases sent to the hospital are under the charge of the County Health Officer, Dr. Stephens. The county removes all cases, all removals are made after 9 o'clock at night. The law requires physicians and heads of families to report cases of contagious or infectious diseases at once, and in case they fail to do so they are fined.

All policemen are required to make a note of anything that looks suspicious. When a case is reported the Health Officer visits it and examines into all the facts. He decides who are to be quarantined and establishes it, quarantining every person that has been even remotely exposed. This is maintained for fourteen days after the last case is removed. All bedding and goods used by the patient are taken to the pest-house, and afterwards destroyed. The vaccinator then commences his work, all who have been exposed are vaccinated, and everybody in the neighborhood, commencing at the infected house.

The room is fumigated with sulphur and scoured. Everything that can convey the infection is taken to the pest-house in a covered wagon and burned. This is all done under direction of the health officer or his assistant. All waste from the patient and the house is carefully removed and disinfected.

Question—Do you believe publication of all cases the true principle?

Answer—Yes. The only plan to secure public confidence is to let the public know the facts. Nothing is kept from the press, and whenever a case occurs it is at once published, and we will continue to do so.

Question—What do you do with people who refuse to be vaccinated?

Answer—Fine them until they submit. Still there are a good many who have escaped us, and this is why we will continue to have small-pox.

Received and ordered filed.

G. B. Thornton presented the following on behalf of the same committee. After discussion, it was referred, together with all other matter on the same subject, to the Legislative Committee :

WHEREAS, There has been maintained by the National Board of Health, at the instance of this Board of Health, a quarantine and inspection station for the past three summers on President's island, just below Memphis, for the purpose of inspecting all steamboats, etc., from the South, and this Board deems this a wise and essential precaution towards the preservation of the public health of the State for at least four months of every year, from June 1 to October 30, and the action of Congress at its last session so limited the appropriation for the National Board of Health that its co-operation with this Board will practically expire by June 30 next, so that the expense of maintaining this or any other quarantine or inspection service in the State will devolve upon this Board, and there is no provision made by the Legislature whereby this Board can carry out the law creating it in this respect, and especially section 2 of "An Act to amend an act to create a State Board of Health, providing for quarantine and the prevention and spread of epidemic disease, such as small-pox, cholera, yellow fever, etc.; therefore,

Resolved, That this Board hereby memorialize the Legislature at its present session to make an appropriation of not less than \$10,000, to be used specifically for the purpose of carrying out the duties imposed upon it by the above named section, this fund to be used for the purposes above set forth, and none other.

And the Committee would respectfully recommend the following, also :

Resolved, That the act passed at the last session of the Legislature, entitled, "An Act to provide for the registration of births, marriages and deaths in Tennessee," be so amended as to have the vital statistics of each county in the State collected and kept by an officer appointed for this duty, which officer shall likewise act as County Health Officer.

Resolved, That the following draft of a bill be submitted as embracing the essential features needed, which, it is suggested, be referred to the Committee on Legislation of this Board for such alteration or amendment as a more careful consideration of its practical workings may demand :

▲ Bill to be entitled, "An Act relating to Coroners, further defining their duties, qualifications and compensation."

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That every coroner in this State, hereafter elected or appointed, shall, in addition to the qualifications now provided by law, be a regular licensed physician, in good standing in his profession, and any one elected or appointed in any court in this State, not having these qualifications as well as those now required by law, may be removed by writ of mandamus at the suit of any person or persons who may institute such proceedings, by making such party, and the county court electing or appointing him, parties thereto, which suit shall be immediately heard, and if the circuit court decides that such party is not qualified as above provided, it will declare the office vacant, and issue its peremptory writ of mandamus to such court to hold another election, provided that such action shall not interfere with the right of appeal.

SEC. 2. *Be it further enacted*, That for the further duties of the Coroner, as hereinafter provided, he shall be paid by the county in which he is appointed or elected, in addition to the fees as now provided by law, the further compensation of not less than — per annum, and counties of — or more inhabitants, by the census of 1880, not less than — per annum, but in no event shall such compensation exceed —.

SEC. 3. *Be it further enacted*, That in addition to the duties of Coroner, as now provided by law, it shall be his duty to act as County Health Officer, and to keep the vital statistics of the county in accordance with the regulations of the State Board of Health and under its supervision. He shall file a regular quarterly report of all the operations and proceedings of his office with the County Court Clerk of his county, and forward a duplicate thereof to the Secretary of the State Board of Health. He shall also record the same in a well bound book, which he is to keep for inspection of all, and turn over to his successor in office. He will also make such special reports as may be required by the County Court of his county, any Judge of any court of record, and also the State Board of Health.

J. M. Safford suggested certain changes in the small-pox circular, under the head of disinfectants, which were adopted by the Board, and the Secretary instructed to incorporate them in a new circular soon to be issued.

There was a discussion of vaccination engaged in by all the members of the Board. T. A. Atchison expressed his preference for humanized virus, believing that it was so

much easier and quicker to take than bovine that it should be used altogether. The popular fears of it are groundless, and the medical profession should so teach the people.

G. B. Thornton thought bovine was not as easily assimilated by the system, and therefore was more apt to fail. He said that there was no doubt about the protection of vaccination, and that it had been exemplified in Memphis recently.

P. D. Sims thought vaccinia was originally caused in the cow by contagion from variola or varioloid, and that they are identical—the cow's system so modifying the principle as to give a person vaccinia and not small-pox.

J. D. Plunket said bovine virus could only be used at short notice, and was the only practical way at this day; as to preferred methods, when we have time, it is a different question.

The President was requested to prepare a paper on the question for the next meeting.

The Secretary requested permission to use the book-cases of the Board for the Library records of the Medical Society for the State of Tennessee, of which he is also Secretary.

The request was granted.

SMALL-POX IN McMINN COUNTY.

Dr. C. C. Fite, Secretary of the State Board of Health, has received the following communication from Dr. Jno. A. Parkerson, representative in the Legislature from McMinn county:

DEAR SIR—I give you herewith a detailed brief statement of features of the epidemic of variola in McMinn county, Tennessee, recently. The disease was communicated from Chattanooga by a negro employed on some of the works there, whose family resided in a colony or straggling village of blacks, in the Sixteenth Civil District, near Gettys Bros' woolen mills. The neighboring negroes,

unaware of the nature of his illness, waited on and visited this man until the development of the eruption warned them of the nature of his sickness. Eleven persons were thus exposed, of these seven died and four recovered. Of the seven who died, none gave any evidence of recent vaccination, and only three had been vaccinated in a period of eighteen years. A pest-house was made of the residence of the first taken, a comfortable frame building large enough to accommodate the cases as they were brought in. All the deaths occurred among subjects more than fifty years of age, except two inmates of the first family, one a female at puberty, the other a male aged thirteen. The subject of recent vaccination who waited on the sick throughout the disease did not contract it in any form. By prompt action on the part of the county authorities the exposed and suspected were effectually quarantined, and their families isolated. The whole village was placed under guard, and the inhabitants of the town and the surrounding community were vaccinated. To enforce the quarantine the suspects were furnished food and necessities at the public expense, and to the energies of the authorities and untiring attention and labor of their committee of citizens is due the prompt suppression of this epidemic.

Of three other cases developed in the neighboring village of Riceville, all protected by vaccination, none were severe enough to demand medical treatment.

The history of these cases and the successful suppression of the epidemic is abundant proof, if any were necessary, of the prophylactic and protective powers of Jenner's discovery of vaccination.

I may add that in public vaccinations, where economy is a consideration, arm to arm vaccination from a subject who is healthy and inoculated with bovine virus is most reliable and rapid, as well as economical.

Respectfully submitted,

JNO. A. PARKERSON, M. D.

RICEVILLE, TENN., Feb., 1883.

THE CAPITOL.

TENNESSEE STATE BOARD OF HEALTH,
NASHVILLE, March 20, 1883.

*To the Honorable the Speaker of the House of Representatives of
the General Assembly of the State of Tennessee*

SIR: The State Board of Health, in obedience to House Joint Resolution No. 135, proceeded to make a sanitary survey of the Capitol building, and beg leave to report as follows:

THE BASEMENT

is in an unsanitary condition, containing miscellaneous debris, which renders the air impure. We recommend that this be thoroughly cleaned, limed and kept well ventilated.

WATER CLOSETS.

The closets are of an old, now disused pattern, and are much corroded. We recommend that they be replaced with those now used, improved automatic closets with ventilating traps.

URINALS.

These are old and imperfect, with decaying wooden partitions which absorb and give out ammonical odors. We advise that these be replaced with improved basins and marble or slate partitions.

DRAINS.

The night soil is conveyed away by a ten-inch clay pipe to a stone sewer at the corner of Gay and Park streets, thence to the Cherry street sewer, thence to Lick branch, where it terminates in an open mouth, being without traps or ventilating shaft from Cherry street to the closets in the building. It is manifest that sewer gas is blown into and diffused over the building whenever the wind is in the proper direction.

For further particulars on this subject we refer to a communication from Maj. Wilbur F. Foster, a skilled engineer, which is hereby made a part of this report, as is also the map of the grounds. The suggestions therein contained, it is believed, would effectually prevent danger from that source.

VENTILATION.

It is believed that the present openings in the building are sufficient for all purposes of light and ventilation if they were properly furnished. As at present arranged, ventilation is impossible without a draft, which is a fruitful source of colds and catarrhal affections. To remedy this evil it is recommended that the windows be boxed, and the sash hung so that necessary top ventilation can be had without the discomfort and danger of a draft.

FLOORS.

These should be overlaid with wood, to protect the feet from chill.

HEATING.

We find two old furnaces in the basement, with cold air tunnels of decaying wood, having rents through which the impure air of

the basement enters to be sent up to the legislative halls for respiration. If this method of furnace heating is to be continued, the dilapidated wooden tunnels should be replaced with others of galvanized iron, drawing fresh air from the outside of the building; but we earnestly recommend that the method of furnace and stove heating be abandoned, and that steam heating be adopted, as the only practical method of warming a building of this character, diffusing, as it does, a uniform and equable temperature over the entire building, whilst stoves and furnaces heat irregularly and furnish a desiccated air for respiration, which is often irritating to sensitive lungs. It is further believed that this mode of heating will prevent the condensation of moisture on the walls, by sweating, which imparts a chill to the atmosphere, and is another menace to the health of the occupants of the building.

WATER SUPPLY.

Water is the shibboleth of the sanitarian as it is the great solvent, deodorizer and detergent. No labor, therefore, should be spared in procuring an abundant supply. To this end the Board urges the construction of a tank in the tower, to be supplied from the city pipes by a service of pumps, the steam to be furnished by the boilers for heating. Down pipes can be carried from the tank to any part of the building and grounds, and furnish water for flushing drains, irrigation, and beautifying the grounds, and cause the now silent fountains to sparkle in beauty.

The Board has no means of knowing the extent and character of sickness, in the present or past General Assemblies, but, judging from the absenteeism and the general complaint of members and attaches of the building, it must be greatly in excess of the percent of illness to the population of the city of Nashville. It is a cause of congratulation, however, that great as has been the amount of sickness and suffering, it has not been more general and fatal, when we come to consider the unsanitary condition of the building.

Mr. J. L. Smith, an experienced architect, has kindly furnished the Board valuable suggestions, which are hereto attached and made a part of this report.

All of which is respectfully submitted.

T. A. ATCHISON,

President State Board of Health.

C. C. FITE, *Secretary*

REPORT OF W. F. FOSTER.

T. A. ATCHISON, M. D., *President State Board of Health:*

DEAR SIR.—In answer to your request, I submit the following

suggestions, which, if adopted, I am confident will effectually relieve the capitol building from any contamination by sewer gas.

The drainage from the water-closets now passes through a ten inch clay pipe around the face of the hill north of the building, and passing out of the grounds near the northeast corner, empties into a stone sewer in the center of Gay and Park streets. This pipe has ample fall, but no ventilation. I would recommend as follows:

1. To construct a manhole, walled up with brick laid in cement and covered with an iron grate, to afford outlet for gases from said pipe, just inside the grounds, near the intersection of Park and Gay streets

2. To construct a similar man-hole over the pipe near its head, between the main drive and the foot-walk west of the capitol.

3. To place a suitable trap in said pipe about ten feet outside of the building.

4. To place a Y branch between said trap and the building, which shall connect with a fresh air inlet pipe eight inches in diameter

I herewith enclose a sketch showing the position of the building, the drives, foot-walks, etc., and the route of the pipe as laid; also the points at which I would suggest placing the above described improvements. The cost of the work mentioned above ought not to exceed \$500.

In order to complete the ventilation and make the system perfect, a ventilating pipe should also be carried from the closets to a point above the roof, said pipe to be eight inches in diameter. The cost of this item can be more satisfactorily furnished by your architect.

Very respectfully,

W. F. FOSTER, *Engineer.*

REPORT OF J. L. SMITH.

T. A. ATCHISON, M. D., *Chairman Committee on Public Buildings, Prisons and Charitable Institutions:*

DEAR SIR —In compliance with invitation of the State Board of Health, I herewith submit such suggestions, after a careful inspection of the State capitol building, as from my standpoint seem of value to the end of rendering the same more healthful. The present sanitary condition of the capitol building is certainly very bad. There is but one trap to the ten closets, and none at all are provided for the urinals, and these all empty into a ten-inch clay pipe. This pipe has an excellent grade or fall, being laid along the sloping grounds on the west and north side of the building and entering Gay street near the northeast corner of the grounds, and through Gay street to a stone sewer in Cherry street, which is an open

mouth sewer. Consequently the winds drive the sewer gas back to the building, where it is sucked up whenever the closet doors are open, and the building is impregnated with this poisonous gas.

Now, as to the remedy. This is a matter easily handled. In the first place, I would recommend that the clay pipe or sewer should be tapped in two or three places, where most convenient, inside the capitol grounds, and put in properly constructed vents.

The rain water pipes, or leaders from the roof, should be brought into requisition as vents from the sewer. These rain water pipes are brought down through the center of the stone walls and copper-lined, and will serve the purpose very well indeed. In the next place, the old closets are, comparatively speaking, worthless, and should be removed, and in their stead put in the Hartford glass water closets. These are very superior closets, and as this subject of water-closets is of vital importance, I will call your attention to a few points in its favor. In the first place, it is a perfect protection from sewage diseases, and in the next place, it excels every other closet made (that I know anything about) in this country for neatness, safety, for health, sweetness and perfect construction and operation, and in my judgment the entire woodwork of the old closets and urinals should be removed and hard wood finish put in, this work to be filled in the best manner and varnished. I suggest this measure purely as a sanitary measure. The urinals should be provided with marble or slate partitions, and the Bedfordshire lip urinal would, in my judgment, be the most suitable and efficient for the place.

Next in turn comes the most vexed question, that of heating. In my opinion the building should be warmed with steam in preference to any other mode of heating, and from the fact that there is not a flue in the building of sufficient size to accommodate the required boiler capacity, there is but one thing left to be done, and that is to build a flue of sufficient size, and this can be done by placing it on the inside of the north wall near the northeast corner behind blank windows. The top of the flue should not be carried above the roof to the extent to make it unsightly. In this way the external appearance of the building could not be affected. The only objection that could be urged against it would be the interior of the apartments in which the flue would be placed. This flue should be composed of stone of the same character as that employed in the building. This being done, the balance would be plain sailing, and the building made comfortable and healthy.

The probable cost of heating the building in this way would not exceed ten thousand dollars, and having boilers and pumps in the

building it would be well to place a tank in the roof of the building, which could be supplied with water by the steam pump. This tank would supply the fountains with strong pressure, and would be found very serviceable for other purposes. For instance, it would serve urinals to be placed in any part of the building, a thing that cannot otherwise be accomplished.

Last, but not least, comes the subject of ventilation. It is a lamentable fact that our beautiful Capitol building was constructed without reference to any plan of ventilation, other than the doors and windows, and hence it would be very difficult to suggest any other mode that would not materially mar the architectural effect and beauty of the building. I could only recommend in this direction that all of the windows that have not been changed from the old French casement window, be changed to the box frame with weighted sashes. It is very important that this should be done, and when this is accomplished we will have done about all that can be done under the circumstances, and the subject of ventilation will have to take care of itself as best it can.

There is a very neat and efficient little device that is very extensively used in the city of Richmond, Va., in her public buildings for ventilation through window sash. See cut of this device at margin. This might be used with good results in our building.

Most respectfully submitted,

JNO. L. SMITH, *Architect.*

DAVIDSON COUNTY JAIL.

TENNESSEE STATE BOARD OF HEALTH,

NASHVILLE, TENN., March 21, 1882.

To the Honorable, the Speaker of the House of Representatives of the General Assembly of the State of Tennessee

SIR -In compliance with House Joint Resolution No 133, the State Board of Health proceeded to make a sanitary inspection of the Davidson county jail, and beg leave to report as follows

The jail is planted on the high rocky bluff of the Cumberland river, the walls are of solid stone, three stories high. The first story, or basement, is the dungeon, in which were formerly kept troublesome prisoners. On entering, we were forcibly reminded of the cruelties of the Dark Ages, even the Black Hole of Calcutta was recalled with a shudder. It is a dark, noisome, rat-infested

hole, lighted and ventilated only by a small aperture in the wall overlooking the river, destitute of all vestige of furniture or means of warmth. We were gratified to learn that no prisoners had been confined in the "dungeon" for the past six months, but in order to place it out of the power of less humane officials to inflict such cruel punishment, we recommend that the dungeon be utterly demolished, that it may no longer remain a witness against us.

The second floor has a corridor running its whole length, on which opens a row of cells, five small and one double cell. The third floor is a duplicate of the second, except that it has seven small cells.

Light and ventilation is effected through a small double-grated window in each cell, in the wall overlooking the river, and the heavy iron-grated doors overlooking the corridors. They are both defective, the light being insufficient, we think, to read with ease, and the ventilation can only be effected by a direct current, which, in cold weather, compels the shivering prisoners to do without air or freeze.

Air Space—In the small cells there is 1,340 cubic feet in space, an amount barely sufficient for two persons, with most favorable conditions of ventilation; yet the prison population has increased to that extent, since this jail was built, as to make it necessary to place five and sometimes even eight men in the small, and double that number in the large cell.

Water-closets—These are not water-closets at all, though flushed with water, they are simply pipes passing from the cells through the wall, and discharging their contents on a table rock twenty feet below, where decomposition takes place, foul and noxious gases being liberated, and rising, are wafted by summer winds into the inviting mouths of these pipes, as well as the windows; and in winter, the warm rarefied air of the cells draws the stench-laden air from without. Officers and prisoners alike agree that the stench is often intolerable. A stink may not cause disease, but is certainly an "emphatic protest against filth."

Comforts—Of these there are absolutely none, no beds, unless furnished by the prisoner himself, only the cold floor and two, or at most three, blankets, no prison library to improve the mind or while away the time, no exercise in the open air, the sick lie where they fall, wrapped in their meager blankets, in a crowded room, disturbed by the unavoidable confusion of their companions, with no food other than the ordinary prison diet.

Bath-room—We find this necessary appurtenance to health and decency conspicuously absent.

Diet—For full information on this subject we append a communication from Mr. Hyde, the jailer, with the recommendation that a coffee ration be added to each meal.

It is manifest, from the foregoing facts, that prisoners in the Davidson county jail do not receive that measure of comfort and humane consideration at our hands which the laws of humanity and religion, to say nothing of justice and common decency, demand. There is not a sensible farmer in this land who would crowd his pig-stye with sick and well, as these cells are crowded with human beings, and there is not a street car mule that is not more royally bedded, and yet these men have not been adjudged criminals, for many, after long immurement, have been honorably acquitted.

The jail is so lacking in all the requisite conditions of a prison, that it is difficult to suggest a remedy that would not be more expensive and less effective than to build a new one.

In the first place, there must be provision for not less than eighty prisoners. This will require forty cells, with a capacity of not less than 1,200 cubic feet of air space. There should be a hospital, with a capacity of not less than 6,000 cubic feet of air space, with bath-rooms, library, chapel, etc.

But if the authorities are deterred by the cost of a new building from falling into line with the march of humanitarian progress, then the Board begs leave to recommend and urge.

- 1 That another story be added to the present wing, which would give five more cells and a small hospital.

- 2 That closets, with suitable traps be placed in the cells, to be drained by service of soil pipes, emptying into the river below low-water mark.

- 3 That folding bunks be put into the cells, furnished with mattresses, for the better health of prisoners.

- 4 That vertical ventilating pipes be put into the cells, to secure the necessary purity of air.

- 5 That the sick be under the control of the physician, who shall be invested with power to order whatever, in his opinion, is necessary for their proper treatment.

- 6 That a bath room be provided, with all necessary appliances, for the health and comfort of the inmates.

- 7 That the mass of fecal matter and other waste, the accumulation of more than a quarter of a century, be removed from beneath the window of the cells and the place disinfected.

Nothing in this report is intended to reflect upon the present jail officials. They have inherited through a long line of predecessors, from the dark ages, the conditions which exist without questioning their fitness. The prison was well lined and had a neat appearance.

For further information, we append a communication from Dr. W. C. Cook, the jail physician, (b), and also a suggestive communication from Mr J. L. Smith, the architect (c), all of which is respectfully submitted.

T. A. ATCHISON, *President.*

C. C. FITE, *Secretary.*

THE JAILER'S REPORT.

DAVIDSON COUNTY JAIL, NASHVILLE, March 22, 1883.

DR. T. A. ATCHISON: *Dear Sir*—As requested by you, I herewith give you the quality and quantity of food given to each prisoner in said jail:

I feed the prisoners twice a day, 9 A. M., and 3 P. M. I give them 1½ pounds of good wholesome beef and an abundance of bread, made of bolted meal. At each meal I feed vegetables of some kind, either potatoes, hominy, apples, pears or some other, changing them often from one kind to another.

I have the cells whitewashed once every ten days or two weeks.

I allow prisoners to board from hotels, restaurants or boarding-houses when they are able to pay for it. I allow prisoners' friends or relatives to send anything to them to eat from the outside that they want.

No prisoners are furnished coffee or tobacco, except those who are able to buy them.

The sanitary condition of the jail is as good as it can be got. I use lime or carbolic acid once and sometimes twice a week in the floors of the jail. I keep buckets of copperas water in the halls of the jail.

The sewerage of the jail has been pronounced very defective by some of our best physicians.

Any further information I can give you I would be glad to furnish it.

Respectfully,

E. H. HYDE, *Jailer.*

THE PHYSICIAN'S REPORT.

NASHVILLE, TENN., March 12, 1883.

To the Hon. State Board of Health.

GENTLEMEN—As the physician to the Davidson county jail, and at your request, as members of the Tennessee State Board of Health,

which body has been directed by the present Legislature to inquire into the sanitary condition of the prison, I cheerfully make the following statement pertaining thereto :

My connection, as physician to the jail, began with this year, and daily since, from one to three times, I have been in the prison in the discharge of duty, and hence have had many opportunities of observing both the prison and its management. It affords me pleasure to state that so far as I have seen or been enabled to learn, the officers, including grand juries, jail commissioners, county judge and sheriff have visited the prison frequently. Their inspections have been careful, and directions have been judicious and wholesome. Likewise the jailer, Mr Hyde, and his assistants, have been attentive to and faithful in the discharge of their duties, and hence have at all times rendered the prison as healthful and the inmates as comfortable as the defective construction and the resulting unsanitary condition of the prison itself would permit. It has been, and is my purpose, still to call the attention of the honorable County Court, at its April term, to some of the defects of the prison which may be remedied : defects which my worthy predecessors, perhaps, have too long withheld from their humane consideration, and which will, doubtless, be corrected, to-wit :

There are sixteen waste-pipes and one privy which discharge the offal of the premises and cells (containing during the year 1,400 prisoners) just outside the prison wall on the ragged embankment of the river, forty or fifty feet from the edge of the water. This offal lies in profusion over this extended surface, and, under the action of the eastern and southern winds and heat of the sun, the foul gases are driven back through the open tubes and windows above, till at times I have known the stench to be almost unbearable and universally complained at by the prisoners. This may be corrected by extending the pipes down into the water and capping them within.

Again, the prison, as you are aware, is made of solid rock masonry, four or five feet thick, with a small window at the end of each tier, and a door at the other, opening into side halls of the full length of the building with likewise small windows. Hence, of necessity, it must be poorly lighted and ventilated. These latter cannot be remedied short of the destruction of the building. Of course this condition of the jail, as every enlightened physician and sanitarian must admit, is not, to say the least of it, conducive to health. You will doubtless agree that all such institutions should be so far as the health and comfort of its inmates are concerned, under the con-

stant supervision and management of a medical expert, who should be punishable by law for neglect of these duties

In conclusion, I would say if, in these suggestions, I have aided in forming correct conclusions as to the condition of the jail, that justice may be rendered all, and that the unfortunate and friendless prisoners, sick or well, may receive the comforts and sanitary protection which our profession insure, and are due our fellow-beings, I shall have gained the object of this paper.

W. C. COOK, M.D., *Jail Physician.*

THE ARCHITECT'S REPORT

T. A. ATCHISON, M.D., *Chairman Committee on Public Buildings, Prisons and Charitable Institutions*

DEAR SIR -I have made a careful survey of the Davidson county jail, in order to determine its sanitary condition, and to recommend such changes as, in my judgment, should be made and I find the building is badly ventilated, and the soil pipes from the closets are simply carried down the outside of the wall, and there seems to be a constant draft up through these pipes into the cells, bringing in an odor that I imagine is not a very healthful one. There is a cellar under the entire jail building. This cellar is not used at present, I believe, for any purpose, it is very close and damp, and I imagine that, in wet weather, there is a good deal of moisture in this place, located as it is on the river bluff, and this cellar is almost entirely closed up. The principal exit for this foul air is up through a large cast iron register in the floor of the jail corridor, where the inmates get the full benefit thereof.

The remedy, by all means, ought to be a new jail, as the present one can never be what it should be, or what is badly needed, but to remedy the old building, I would recommend that the cellar be well ventilated, and the opening in the corridor floor be closed up; that the cells be provided with good closets, trapped, and provision made for properly flushing, and these soil pipes all to be carried under ground and into the river, through a main sewer, so as that the sewer will discharge below low water mark. Vertical ventilating shafts should be put in with top and bottom registers. This would add greatly to the health and comfort of the inmates, and it is recommended to the Board that an additional story be placed upon the building, with the view of getting additional cell room and a hospital room, say 18 by 19½ feet. The probable cost of doing this would be about \$12,000.

Most respectfully submitted,

JNO L SMITH, *Architect.*

QUARTERLY SESSION, APRIL, 1883.

NASHVILLE, April 3, 1883.

The State Board of Health met in quarterly session at the office of the Board, in the Capitol, at 11:30 A. M., April 3d, the President, Dr. T. A. Atchison, in the chair, and Dr. J. D. Plunket, Dr. Jas. M. Sifford and Col. E. W. Cole, of Nashville, and Dr. P. D. Sims, of Chattanooga, present; also, the Secretary, Dr. C. C. Fite. Dr. G. B. Thornton and Hon. John Johnson, of Memphis, absent.

The minutes of the January meeting were read and approved.

Dr. P. D. Sims made the following report of small-pox in Chattanooga, from January 7, 1882, to April 1, 1883:

Report of cases of small pox in Chattanooga, Tenn., from Jan. 7, 1882, to April 1, 1883. Total number of cases, 685. Total number of deaths, 335, as follows:

1882—January 1; February, 1; March, 3; April, 0; May, 14; June, 21; July 17; August, 9; September, 8; October, 15; November, 48; December, 102.

1883—January, 75; February, 17; March, 4; total, 335.

Dr. J. D. Plunket, Chairman of the Legislative Committee, made a verbal report of the work of the Committee during the session of the Legislature just past.

REPORT OF THE SECRETARY.

The Secretary then read a full report of the work of his office for the three months ending March 31, which is as follows:

REPORT OF THE SECRETARY AND EXECUTIVE OFFICER OF THE
STATE BOARD OF HEALTH FOR THE MONTH ENDING MARCH
31, 1883.

TENNESSEE STATE BOARD OF HEALTH,
NASHVILLE, April 3, 1883.

To the President and Members of the State Board of Health

GENTLEMEN—I respectfully beg leave to submit this my report of the work of the office since January 1. Small pox has been

prevalent in a number of places in the State, and it has necessitated an extensive correspondence to keep up with its progress and advise measures of defense. Dr. P. D. Sims of this Board, and also a member of the Chattanooga Board, will make a report covering the epidemic at that place, and it will not be necessary, therefore, to refer to it in this report further than to say that Dr. E. M. Eaton, the Secretary of the Board, furnished, monthly, complete reports as long as the disease lasted. Dr. Richard Cheatham, Health Officer of Nashville, furnishes the following report of the epidemic in Nashville for the past three months.

" NASHVILLE, TENN., April 3, 1883.

" C. C. FITE, M. D., *Secretary State Board of Health, Nashville.*

DEAR SIR In reply to your request of the 27th ult., I beg leave to submit the following summary of cases of small-pox occurring within the city of Nashville during January, February and March, 1883

" White—males, 30, females, 18, adults, 33, minors, 15. Total, 48.

" Colored—males, 57, females, 47, adults, 44, minors, 59. Total, 103. Total number of cases, 151.

" Respectfully,

" RICHARD CHEATHAM, M. D.,
Health Officer."

Dr. Charles Mitchell, physician in charge of the Davidson county pest-house, reports that there have been received at the hospital since January 1, 155. White, 11, colored, 144, adults, 70, minors, 85; males, 75, females, 80. Of these, 37 died, 79 discharged, still in hospital, 39. During February and March, 82 cases were reported in the county outside the city limits.

March the 7th quarantine was raised by the city and county authorities as it was held that the general vaccination then inaugurated would put a stop to the epidemic. Unfortunately this does not appear to have been the case, and the disease has lately been on the increase. The virus used by the vaccinators was, it is stated, in many instances, inert, and a number of persons claim that they were never visited by the vaccinators at all. The Local Board of Health will probably take action in the matter to-day.

On March 10 a case occurred at the State prison. The lessees have made arrangements to have their cases treated at the old pest-house.

On February 13, a telegram was received from Major Campbell Brown stating that there was a supposed case of small-pox at

Spring Hill, and requesting that an expert diagnostician be sent out to examine the case and determine the matter. The physicians in the neighborhood declining to visit the case, and there being urgent necessity for an investigation, the matter was submitted to the President, and at his request I went out to see the case. The exposed persons had been placed in quarantine, and these, thirteen in number, were vaccinated. The patient, with a nurse, was in a small cabin in an open field. The patient had a well-developed case. There have been only two other cases developed, and they were in the quarantined family. After examining the patient and meeting with a citizens' committee, and advising as to the management of the case, the day was spent pleasantly at the hospitable house of that type of gentlemen, Maj. Campbell Brown.

Early in February a case of small-pox was developed at Johnsonville. Dr. P. F. Gould has had charge of it, and has displayed the highest courage and executive ability in executing the trust. A community is fortunate in having such a citizen, and the people of that section of the State have found their confidence worthily bestowed. Dr. Gould furnishes the following report of the epidemic at that point, all the cases originated from the case above mentioned.

Total number of cases, 45; to the 24th of March, deaths, 14; of these there had never been vaccinated 11, of these old marks were shown in 3 of the recovered, there were with old marks, 9, with more recent marks, 9, of those whose vaccination had failed, 13.

There have been no cases amongst the white population. Every person that was put in quarantine developed the disease in some form.

Dr. S. W. Frey, who had charge of the small pox at Coopertown, Robertson county, has furnished the following excellent report. Dr. Frey managed his cases with great skill and ability.

COOPERTOWN, TENN., March 27, 1883.

C. C. FITE, M. D., *Secretary, Nashville, Tenn.*

DEAR DOCTOR - At your request, I submit the following: Total number of cases of variola and varioloid, 24; of variola, 14 or 15 cases; of varioloid, 9 or 10; number left convalescent, 16; number still in quarantine, none; number of vaccinated persons who took the disease, 15. My views of bovine vs. humanized virus are decidedly (owing to the uncertainty of the bovine virus, I suppose, on account of its staleness), in favor of humanized virus, all things considered. As to whether bovine will give greater protection or not, I am unable to say. Would prefer a fresh, healthy bovine

virus, if we have time and a proper distance from great dangers of small-pox; though if in immediate proximity to, and already exposed to the disease, I should much prefer the healthy humanized, first or second remove from the bovine, for the reason that it is more certain to take, and does so sooner than the bovine, the *disease transmission theory to the contrary notwithstanding*. I think that vaccination has proven itself of value in the recent outbreak of small-pox here. I know that our statistics (below appended) show some very bad and even fatal cases, who were vaccinated at one time in life, but they were all of long standing, and even at that, only one of those vaccinated in *ante-bellum* days but what had a very light varioloid. This exception was imperfectly vaccinated in 1838, as is stated to me by her sister, who was well vaccinated at the same time and withstood [the disease, only a very slight varioloid (in the recent outbreak). It will be seen also from the statistics that three other fatal cases had been vaccinated, but it was done in 1866, just at the close of the late civil war, when our country was still in a state of *moral* as well as *civil* corruption, and the virus used was spurious (perhaps syphilitic), as is clearly shown by the absence of a typical vaccine cicatrix. It looks like the scar of an old burn, irregular in contour, wanting in pitted depression so characteristic of a good vaccine scar, and therefore affords no protection from variola. Only one of the cases recently vaccinated had more than a slight varioloid, and this exception was just beginning to take vaccination when the disease overtook her, six days after she received it and on the sixteenth day of exposure. The source of small pox infection here is a mystery. Many speculative theories are advanced, but they all lack confirmation. The first case was an orphan bound girl, eight years of age, of syphilitic and strumous parentage. All her life a subject of boils, ulcers and skin eruptions she, sporadically as it were, contracted chicken-pox sometime last year and recovered after a tedious effort. Had not been off the place in six months preceding her variolous attack. No stranger or sick person had been about the place of which any one knew for months. On the 25th day of December, 1882, she ate of two parcels of Christmas candy, to which the family is inclined to attribute the cause, and on the 31st she began to complain of pain in the right side, a hacking, dry cough, a rise and fall of fever, pain in the head, limbs and back, a flushing of the cheeks alternately, and on the night of the 3d of January following, the eruption appeared upon the face, neck, body and upper extremities, coming out in successive crops each night, until the entire surface of the body and limbs was thickly studded with vesicles, the ankles and front of the abdomen excepted. On the 11th the vesicles (for they

could hardly be called pustules) began to dry away. Their contents a thin, milky fluid, seemed to disappear by absorption. Papules appeared upon the dorsum and soles of the feet as late as the tenth day after their first appearance upon the face. On the 17th day of January, six days after the first scab appearance, two other persons took the disease, and on the 18th several others took it, and later still, others. But no case, except the first, was taken earlier than the 17th of January, leading us to believe that all the cases were contracted by direct exposure to the little girl. Where the first germ came from we cannot tell, indeed, have scarcely a plausible idea. But we certainly would make an untiring effort to find out if we could only get the slightest clue from which to start.

Hoping, Doctor, that these imperfect notes may find their destination safely and be of service to you, and again thanking you for your kind assistance and recognition in our time of sorest trouble, I am, yours respectfully,
S. W. FREY

Knoxville had a good deal of trouble for a while—in December and January, but early in January the City Board of Health induced the City Council to appoint nine vaccinators, and they did their work well and the disease was soon under control. Up to February 5 they had thirty one cases, not including the cases developed previous to January 1.

Dr. A. McNabb, President of the Cleveland Board of Health, reported, January 26, that there were ten cases then, by February 13 three more cases were developed. No report from that point since the above date.

Dr. S. P. Hood had charge of the cases at Mossy Creek, and displayed an unusual amount of executive capacity in the way he managed them. Up to February 27 he reported forty-eight cases. Of eighty exposed persons only four had ever been vaccinated. By prompt isolation and vaccination, the disease was controlled successfully.

Early in February a case was developed near Gainesboro, Jackson county. The county authorities had a great deal of trouble in preventing the neighbors from visiting the case, but by prompt and vigorous measures the disease was limited to six cases, and the entire county is now well vaccinated.

The cases at Johnsonville created a great deal of alarm up and down the Tennessee river, and on the line of the railroads the demand for quarantine was general and vigorous, but the safer plan of vaccination was finally adopted, and a large scope of country that has had no vaccination since the war is now well protected.

At Nixon, a boat-hand who had helped carry a case at Johnsonville, was the cause of no little alarm, but as the Local Board was ready to take charge of it, there were no new cases. January 4, a case was developed at LaGuarda, Wilson county. Dr. W. W. Prater reported five other cases developed from that one in the same household.

Nearly every other town in the State has asked for permission to quarantine against the infected points, but the advice has always been, "Small-pox is a continuous epidemic, and absolute quarantine almost impracticable, differing from the limited summer epidemics."

The circular of recommendations issued soon after the January meeting of this Board has been the means of largely disseminating the proper views on this question. Copies of the circular and resolution in regard to vaccination have been widely distributed. They were sent to all the county courts and Boards of Health in the State, and to the city authorities of all the larger towns, and to a number of others. The recommendations therein contained have been cheerfully accepted and acted upon, the only exception being that the county courts of several counties refused at first to assume the expenses of the cases of small-pox, but after calling their attention to the specific law upon the subject, they have, in every case, so far as heard from, yielded.

The Mayor of Huntingdon addressed a letter to the Governor of the State in regard to the Johnsonville epidemic the letter was referred to this office for action. Communication was held with Mr. Thomas, the superintendent of the Nashville, Chattanooga & St. Louis railway, who gave assurance that the nearest case to the track at Johnsonville was sixty feet, and that passenger trains did not stop over three minutes, and freight was not received from any infected point, and household goods and bags were not taken on at all.

The danger on the rivers is from steamers, they ship hands without ascertaining whether or not they are vaccinated, and if they take sick they are put off without regard to consequences.

If vaccination was a new and untried preventive against the small pox, the experience of this office, in the past three months, would establish its value beyond controversy. If we were to enumerate the points at which it was exemplified it would take page after page to give the plain facts. Vaccination, genuine, complete and exhaustive, will put out an epidemic of small pox as certainly as a bucket of water will a lighted torch. Wherever vaccination has been neglected, or carelessly or superficially done, the battle against the loathsome disease has been long and tedious. Quarantine is, of course a necessity, as vaccination is so much

neglected and avoided. But this office has certainly taught the doctrine, to quarantine the diseased, but vaccinate, vaccinate, until every body is protected.

The general work of the Board has been unusually heavy during the quarter just past, and legislative matters consuming a great deal of the time, much of the work has had to be hurriedly done. There has been considerable demand for the first report of the Board, and a number of them have been sent out in the State and elsewhere.

The chairman of the Legislative Committee will make a report concerning all matters of that nature, and it will, of course, include the new law in regard to jail physicians. It is unfortunate that it does not apply to every county in the State instead of to counties with fifty thousand inhabitants.

The most serious obstruction the Secretary has in carrying out the work of the office is to know who is the proper officer to communicate with. Often letters will be received from several persons, each giving a different statement of the surroundings, and all desiring things done their way.

On March 14, a correspondence with the Secretary of the National Board was opened in regard to the status of the Board and the quarantine fund. The following letters from him explain themselves.

NATIONAL BOARD OF HEALTH,
WASHINGTON, D. C., March 16, 1883.

C. C. FITE, M. D., *Secretary State Board of Health, Nashville*

DEAR DOCTOR. —Yours of the 14th, inquiring concerning recent national legislation on public health matters is at hand. The sum of \$10,000 has been appropriated for the pay and personal expenses of this Board, which continues to live under the provisions of its constituting act of March 3, 1879 but no money has been appropriated to enable it to carry on any work on behalf of the public welfare. Instead, the sum of \$100,000 has been placed at the disposition of the President "in aid of State and Local Boards or otherwise in his discretion, in preventing and suppressing the spread of the same (epidemic, threatened or actual) and maintaining quarantine at points of danger."

The President as yet has not decided upon the agency to be used in the execution of the work. Last year this fund was referred by him to the Secretary of the Treasury, who nominated the Marine Hospital Service as belonging to his own department. There is reasonable ground for doubting whether this action will be repealed this season. I am, very respectfully,

CH. SMART, *Secretary.*

NATIONAL BOARD OF HEALTH,
WASHINGTON, D. C., March 21, 1883.

To C. C. FITE, *Secretary Board of Health, Tennessee*.

DEAR SIR — Yours of the 19th instant is received. I will not fail to give you prompt information concerning the President's election of the Executive agency for the management of the epidemic fund. If need be I shall communicate by telegraph. I do not look for the settlement of this matter until about ten days hence.

I find I have but one copy of the Sundry Civil bill; but I transcribe on another sheet the paragraphs you desire.

I am, sir, very respectfully,

CH. SMART, *Secretary*.

EXTRACT SUNDRY CIVIL BILL, APPROVED MARCH 3, 1883.

* * * * *

For the National Board of Health, for compensation and personal expenses of members of the Board, \$10,000.

The President of the United States is hereby authorized, in case of a threatened or actual epidemic, to use a sum, not exceeding \$100,000, out of any money in the Treasury not otherwise appropriated, in aid of State and local boards, or otherwise, in his discretion, in preventing and suppressing the spread of the same and maintaining quarantine at points of danger.

* * * * *

CH. SMART, *Sec. N. B. H.*

NATIONAL BOARD OF HEALTH,
WASHINGTON, D. C., March 26, 1883.

DR. C. C. FITE, *Secretary State Board of Health*

DEAR SIR — As it is doubtful whether the President's decision with regard to the epidemic fund will be made known prior to April 3, I send you the enclosed letter as a formal statement of the position of this Board under present conditions. I am, Doctor, very respectfully,

CH. SMART, *Secretary*.

Of course, I shall not fail to inform you of any new developments.

The bad sanitary condition of the Capitol has long been a subject of remark by every observing person, but as no one had taken steps to call the attention of the proper authorities to it, nothing has been done. During the session of the Legislature just past, the attention of a number of members was called to it, and the Speaker of the House, Mr. Ledgerwood, introduced a resolution to have this Board examine into the necessities of the situation. In due

time the resolution became a law, and the resident members met with the President, and after carefully investigating the building, aided by competent experts, the report was made by the President and read in both Houses of the Legislature. An appropriation has been made to carry out the recommendations of the Board to a certain extent. The greater trouble, sewer-gas, will be at least removed. (See page 32.)

The Legislature instructed the Board to examine into the condition of the Davidson county jail, which was done and the report made by the President.

The Board is requested to allow the Secretary to settle each quarter, so that the minutes of each meeting shall show that there are no unsettled claims of any kind. If the President will appoint a committee, the accounts can be examined and settled in a few minutes. This course will relieve the Secretary of responsibility and protect the Board against mistakes. Find hereto attached a list of accounts that have been filed for approval by the Board.

All of which is respectfully submitted.

C. C. FITE,
Secretary and Executive Officer
Tennessee State Board of Health.

The Board then adjourned until 2:30 P. M.

AFTERNOON SESSION.

NASHVILLE, April 3, 1883.

The Board met at 2:30 P. M. Several matters were brought up, and after discussion were laid upon the table until to-morrow.

The Board adjourned until 10 A. M. to-morrow.

MORNING SESSION.

NASHVILLE, April 4, 1883.

The State Board of Health was called to order by the President, Dr. T. A. Atchison, at 11 o'clock. Dr. Jas. M. Safford, Dr. J. D. Plunket, E. W. Cole, of Nashville; Dr. P. D. Sims, of Chattanooga, and the Secretary, Dr. C. C. Fite, of Nashville, were present.

Communications from Dr. J. L. Watkins and Dr. T. P. Crutcher on the subject of vaccination and the comparative value of the different kinds of virus were read and referred to Dr. Atchison, Chairman of the Committee on Vaccination.

Dr. Watkins embodied the following table in his letter: Primary vaccinations, with bovine virus, ninety-two; successful, seventy-two; unsuccessful, twenty; with humanized virus, fourteen; successful, fourteen; unsuccessful, none.

A communication from Dr. W. C. Cook, the County Health Officer of Davidson county, was received and read. The letter called attention to the new law in regard to the duty of the County Health Officer.

A committee, consisting of Drs. Atchison, Sims and Plunket, were appointed to formulate rules and regulations for the management of small-pox, and to report at 3 P. M.

The term of Dr. G. B. Thornton having expired by limitation, it was moved by Dr. Plunket, and carried, that the Secretary cast the ballot for Dr. Thornton to be his own successor.

The election of President and Vice-President was now, upon motion, proceeded with.

Dr. T. A. Atchison was elected President, and James M. Safford was elected Vice-President.

It was moved by Dr. Plunket, and carried, that \$200 be appropriated to purchase some new books.

The accounts against the Board were presented by the Secretary and approved.

The Board adjourned until 3 P. M.

AFTERNOON SESSION.

NASHVILLE, April 4, 1883.

The Board convened at 3 P. M.

Dr. P. D. Sims, from the committee to formulate rules for the management of small-pox, presented the following

report, which was adopted, except the section in regard to virus, for which the following words were substituted: "No virus should be used that is not known to be genuine, pure and of recent production:"

EFFECTIVE MANAGEMENT OF SMALL-POX.

W. C. COOK, M. D., *Health Officer of Davidson county:*

SIR—The State Board of Health acknowledges the receipt of your official communication of this date, announcing the presence of small-pox in Davidson county.

As the most effective and indeed the only means of eradicating the disease, this Board would advise the immediate inauguration of a thorough system of vaccination of the entire population of the county. In order to obtain the greatest amount of thoroughness we would advise that a competent and conscientious physician be appointed for each civil district, whose duty it shall be to make house-to-house visits and vaccinate all persons who are, in his opinion, not thoroughly protected by previous vaccination or attack of small pox. A thorough census of the county should be taken and a complete record made showing name, age, sex, color and locality of every individual, with a history of each as to vaccination, when vaccinated, with what virus and with what result.

The State Board advises that preference be given to humanized virus, as it has stood the test of a century, while bovine virus is open to the serious objection of frequent disappointment in results.

As an auxiliary measure doubtless guaranties might be useful when there was only one focus of infection in a neighborhood, but when the disease has assumed an epidemic form, and is spread over a large area, this would seem to be of little value. Under such conditions the inutilty of guaranties will be made manifest by the frequent occurrence of varioloid in a form so mild as to escape detection, not only of officers and experts, but of the patient himself.

Disinfection of bedding and apparel of patients should not be admitted as a means of hindering the spread and possibly lessening the virulence of the disease.

Any one of the following disinfectants may be used.

[The circular of recommendations of the Board for the prevention and management of small-pox was hereto appended.]

The report was referred to an Executive Committee consisting of the resident members of the Board.

It was also moved by Dr. Plunket, and carried, that the Executive Committee be a permanent committee.

The Secretary presented a report of small-pox in Memphis for the quarter, there having been fifteen cases in all.

After a full discussion of vaccination and of the small-pox epidemic, the Board adjourned to meet the first Tuesday in July.

QUARTERLY SESSION, JULY, 1883.

NASHVILLE, July 3, 1883.

The Tennessee State Board of Health met at the office of the Board in the Capitol at Nashville, in quarterly session, July 3, at 11 A. M., T. A. Atchison, the President, in the chair. G. B. Thornton of Memphis, P. D. Sims of Chattanooga, J. D. Plunket and E. W. Cole, of Nashville, and the Secretary, C. C. Fite, were present.

The Secretary read the minutes of the April meeting of the Board, which were approved.

The Secretary then read a detailed report of the work of the executive office of the Board for the past three months, as follows:

GENTLEMEN—I respectfully beg leave to submit this as the report of your Secretary for the quarter ending June 30

Since the April meeting of the Board, small-pox has been on the decrease throughout the State. A supposed case was discovered at Woodbury late in March. April 6, letters were received stating that three other cases had developed, but on the 11th, Dr. H. M. Hearn notified this office that the patients had measles, not small-pox. Dr. Hearn had not seen the cases, the diagnosis having been made by a nurse and another physician. The scare gave an impetus to vaccination, however, so no harm was done.

Having heard rumors of a case near Shelbyville, the County Judge was telegraphed to in regard to it. He answered that there was no case there. From a letter received from Dr. R. F. Evans it appears that the case had symptoms which led the attending physician, Dr. Evans, to be apprehensive of a case of small-pox in

its initiatory stage. A consultation was called to decide the matter, and it was pronounced not to be small-pox.

Dr. P. F. Gould wrote April 30, that Johnsonville was at last free from small-pox, the last case having been dismissed on the 29th. He has written an elaborate and carefully prepared report of the epidemic, and it is herewith attached and made a part of this report. There were in all forty-seven cases in and near Johnsonville, with sixteen deaths. Dr. Gould states that there was not a death in a case where pus formed.

Dr. J. L. Shy reported a case, two and one-half miles from Franklin, April 7. Another case at the same place, April 17. There were also three cases at the pest-house.

The first cases were in the Boyd family, where there were eleven inmates and a school of twenty pupils exposed, but a prompt and effective vaccination put a stop to the disease.

Dr. J. K. Barlow, Secretary of the Savannah Board of Health, reported, April 19th, that a negro boat-hand from the steamer Johnson died there three days after landing. Every precaution having been promptly taken, no other case occurred.

Dr. S. P. Hood, of Mossy Creek, was called to Morristown April 9, to examine some cases of a suspicious nature. There had been two deaths from what was supposed to be hemorrhagic malarial fever, the typical eruption not appearing in either case. Dr. Hood reported, under date of May 5, that no case had developed since April 20. There were twenty-nine cases with thirteen deaths. The prompt suppression of the epidemic was due to Dr. Hood's effective management.

Telegraphic and telephonic communication was held with Clarksville, April 21, 22 and 23, in regard to small-pox near that place. Dr. C. W. Beaumont, Health Officer of Clarksville, wrote, April 21, that Dr. N. L. Carney, County Health Officer, had charge of the cases, there being at that time four cases ten miles from the city and ten cases in New Providence, two miles from Clarksville.

The origin of the disease was from a colored laborer from Kentucky. The disease appearing at their camp, they were unwisely dispersed, and spread the disease.

In January the Clarksville Board instituted a general vaccination, and it was carefully and thoroughly done.

The cases at New Providence were carefully isolated, but as there was great difficulty in convincing the citizens that it was small-pox, the rules could not be strictly enforced. It was claimed that it was varicella, not small-pox. April 27, Dr. Carney visited

this office, and requested me to visit the cases and settle the matter. After consulting with the President of this Board, I went to Clarksville on the evening train, April 28. The next morning, Sunday, April 29, the cases were all visited and examined. The druggist who had first treated the cases, and who still claimed it was chicken-pox, and Dr. Carney, visited the cases with me. After a careful examination of each case, and also a convalescent in Clarksville who had just had varicella, a written opinion was given to the effect that the cases that day visited, and then ill, were small-pox—that the earlier cases appeared, from the history given by their medical advisers, to have been varicella. A re vaccination was advised, as also a careful quarantine of exposed persons, and complete isolation of the sick. Dr. Carney stated that he had already adopted the rules of this Board, and would enforce them.

I desire to express my obligations to Drs. Carney, Bailey and Beaumont, and to the Hon. C. W. Tyler, County Judge, for courtesies shown. That afternoon I drove to Guthrie, Ky., in a buggy in time to catch the evening train to Nashville. Dr. Carney has forwarded an excellent detailed tabulated report of the epidemic. Said report is hereunto attached and made a part of this report.

The President of the Murfreesboro Board of Health, Dr. J. B. Murfree, reported, April 17, that a case had developed there in the person of a negro boy, who had been to Nashville ten days previously. Dr. Murfree stated that the case was carefully isolated, and obligatory vaccination instituted in the immediate neighborhood. Hon. Irvin Burton, Mayor of the city, telegraphed that every conceivable precaution had been taken. It appears from subsequent letters that the territory put in quarantine was too large, and the cases which afterwards occurred owed their origin to other causes than contact with the first case. This error was on the side of prudence, however, and the Local Board should be gratified that it was limited to five cases. Dr. Zarecor had charge of the treatment of the cases. The quarantine was raised June 16. June 24 Dr. Murfree reported that Dr. Byrn reported a case at the jail, the origin of the contagion being unknown.

Dr. Robertson reported to Dr. Murfree a case at Jefferson, Rutherford county, June 28. The patient, a negro man, had been in Nashville ten days previously.

The Secretary of the Chattanooga Board of Health, Dr. E. M. Eaton, reports that there were thirty-two cases reported to the Registrar of Vital Statistics for the quarter ending June 30.

Dr. G. B. Thornton reports the number of cases in Memphis for the quarter as fifteen, all of which were pest-house cases.

The following is the report of small-pox in Nashville for the quarter just past:

NASHVILLE, June 30, 1883.

C. C. FITE, M. D., *Secretary State Board of Health*:

DEAR SIR—In reply to yours of the 25th inst., would say that for the quarter ending to-day noon, we have had one hundred and thirty-two cases of small-pox, distributed through the quarter as follows: April, 77; May, 35; June, 20; making, as you see, a steady decline from month to month. We have only had one case since the 12th inst., and this occurred in quarantine, and in the person of the wife of a man who had the disease in its most malignant form. We now have only three quarantines in the city, and it looks like the disease was on its last legs.

Very respectfully,

CHAS. MITCHELL, M. D.,
Acting Health Officer.

Dr. W. C. Cook furnishes the following report for Davidson county

NASHVILLE, TENN., June 30, 1883.

C. C. FITE, M. D., *Secretary State Board of Health*.

DEAR SIR—At your request, I beg leave to submit the following report concerning the existence of small-pox in this community from April 1, 1883, to June 30 of the same. This includes such cases as, first, that had the disease in the county outside the corporate limits of Nashville and were sent to the small-pox hospital; second, that had the disease beyond the city and remained at home; and, third, those that took the disease in the city and were removed to hospital. You observe such as had the disease and remained in the city are not noted. For these, the City Health Officer, Dr. Cheatham, will account.

At a convenient time I can furnish you some statistical observations on vaccination at the hospital, as well as on out cases, which I wish to regard as supplementary to this report:

Twenty-six cases of small-pox occurred and were treated at their homes outside the corporate limits of Nashville, from April 1, 1883, to June 30, 1883.

One hundred and sixty-seven cases were treated in the Davidson county small-pox hospital from April 1, 1883, to June 30, 1883, received from the city of Nashville and the county proper.

The disease seems to be rapidly decreasing, and in a few days we trust to be rid of it entirely.

You will pardon me for calling your attention to the new law passed by the last Legislature, uniting the work of Jail Physician

and County Health Officer. I would be pleased if your honorable Board would give us a construction of the same, as pertaining to the duties of said officer. Is it the duty of your Board, under that law, to issue instructions to him? What authority has he, in the absence of such instructions or directions? Please consider these questions, and if deemed advisable to give directions, they may be made specific and legal, and in emergencies will serve to render much assistance to the local health agencies.

With respect, I have the honor to remain,

Yours most respectfully,

W. C. COOK, M. D.,

Health Officer of Davidson County.

EXECUTIVE COMMITTEE.

This Board at the April meeting by resolution created the resident members of the Board an Executive Committee Acting under the instructions of the President. a meeting of this Committee was called to meet at this office April 14, at 11 30 A. M. the object being to formulate rules under the recent legislative enactment, for the management of small-pox by the Health Officers of Davidson and Shelby counties.

There were only two members of the Committee present, the President and the Vice-President, which was not a quorum, so no action was had.

SHELBY COUNTY HEALTH OFFICER.

Dr. H. L. Williford, Jail Physician of Shelby county, wrote June 15, that there was at Frazier's Station two cases of small-pox, and that the chances were very good for an extension of the disease. He added "Please inform me at once what my official duties are in such cases, or whether or not I have anything to do in the matter." Dr. Williford was referred to the Act in question, and a copy of the circular used by this office in similar cases was sent him. This was done provisionally, the Executive Committee having failed to formulate special rules, as above related.

KENTUCKY STATE BOARD.

A letter was received April 13, from Dr. J. N. McCormack, of Bowling Green, member of the Kentucky State Board of Health, in regard to the small pox in Nashville, asking for a detailed statement in regard to the methods of preventing the spread of the disease. The letter was referred to the Nashville Health Office for details. The assurance was given, however, that the reports were greatly exaggerated.

MICHIGAN STATE BOARD.

At the April meeting of the Michigan Board of Health, Dr. H. B. Baker, the Secretary, referred to the "alarming presence of small pox in Nashville and New Orleans, and suggested that Michigan was in danger on account of citizens from those places visiting her summer resorts.

A letter was sent stating that "small-pox is not prevalent anywhere in this State outside of Nashville, and is on the decline here. It has never appeared amongst that class of the population that visits your summer resorts." From subsequent correspondence it appears that a notice in the "Sanitarian" of the last meeting of this Board was headed as a meeting "to devise means to prevent the spread of small-pox."

VACCINATION.

During the prevalence of small-pox in the two years just past vaccination has proved its value innumerable times, but the difficulty of securing reliable virus that will "take" promptly and effectually, has been the source of endless delay and trouble.

COUNTY COURT.

County Courts in Tennessee have, in a number of instances, declined to assume small-pox expenses. As a rule, however, a letter addressed to the County Judge, calling attention to the specific and mandatory law, has been sufficient to induce a proper course. Sections 1729 to 1732 inclusive of Thompson & Steger's Revised Laws of Tennessee, page 822, vol. i., are so clear as to leave no room for argument.

DIFFERENTIAL DIAGNOSIS

At the beginning of an outbreak there is often trouble in determining the nature of the disease. The differential diagnosis is of course sometimes difficult, but it more often is because men are found practicing medicine without the first rudiments of medical knowledge. Presumptuous ignorance and stupidity combined are not qualities to make a person a skillful diagnostician.

Dr. G. B. Thornton, President of the Memphis Board, and member of this Board, wrote advising the appointment of Inspectors at Chattanooga Grand Junction and Corinth, Miss., to take up the certificates of the National Board of Health Inspectors at New Orleans in the event of a threatened epidemic this season. After consultation with Dr. T. A. Atchison, the President, and further

correspondence with Dr. Thornton, Dr. P. D. Sims, of Chattanooga, member of this Board, was requested to appoint said Inspector at that point. Mr. J. T. West, the railroad agent at Grand Junction, was appointed at that place and accepted.

A request was addressed to Dr. Wirt Johnson, Secretary of the Mississippi State Board, requesting permission to appoint an Inspector at Corinth. He replied that his Board had no authority under the law to grant the request, and he regretted his inability to extend the courtesy.

Some correspondence has been had with the Secretary of the National Board of Health since the last meeting of the Board. It was principally in regard to the epidemic fund and plans for this season. The Executive Committee of that Board issued a circular letter May 3, stating that inspection stations would be opened at Norfolk and Sapelo Sound and Ship Island, in aid of State and Local Boards. An inspection service was also ordered on the Mississippi river, Dr. Thornton being placed in charge of the service at Memphis. The Secretary of the National Board notified this Board, May 24, that the epidemic fund of \$100,000 had been placed in the hands of the Marine Hospital Service. A letter was addressed to the Supervising Surgeon General of the Marine Hospital Service in regard to the disposition of said fund. The following reply was received.

OFFICE SUPERVISING SURGEON GENERAL.

U. S. MARINE HOSPITAL SERVICE.

WASHINGTON, June 15, 1883.

C. C. FITE, M. D., *Secretary Tennessee State Board of Health,*
Nashville, Tenn. :

SIR—Referring to your letter of the 12th inst., in which you say, "This office desires information as to the method that will be adopted to prevent the introduction of cholera and yellow fever into the country during the present summer," I have to say that, in case the State of Tennessee is threatened with an invasion of cholera or yellow fever during the present summer, an application from the Governor, addressed to the Secretary of the Treasury requesting aid, will receive prompt attention.

Very respectfully,

P. H. BAILEY, *Surgeon.*

For the Surgeon-General M. H. S., in his absence.

There have been rumors of yellow fever at Vera Cruz for some weeks in a very malignant form. June 26 it was definitely stated that the death rate was very high. Apprehensions were felt of cases

appearing in quarantine at Galveston June 28, the Norwegian bark Alma, from Vera Cruz, was reported at Horn Island with cases aboard. The vessel was put in quarantine at Ship Island by the National Board of Health authorities, but as that Board was to give up that station, and all others, it is not known at this time what steps will be taken to protect the country against the terrible scourge.

There were 28 deaths from cholera at Daimietta, Egypt, June 25. There have also been suspicious cases at Port Said, Tintah, Manassura and Cairo. There were cases at Bombay as early as May. Italy, Turkey, Spain, France, Malta and Austria have quarantined against Egypt. The steamer St. Bernard, from Bombay, had cholera on board when she reached Havre, June 28, and was not allowed to come into port. It is stated that the British Government had not quarantined, and it is feared that the plague may reach England, and in that way the rest of the world. The Austrian Government advises an International Sanitary Council, to institute general and uniform measures of defense. What steps have been taken in the United States to guard against the importation of the infection through vessels from the Mediterranean does not yet appear.

Respectfully submitted,

C. C. FITE, *Secretary.*

The report was received and filed.

A list of books added to the library since the April meeting was appended to the Secretary's report.

The request for quarterly settlements was renewed.

J. D. Plunket made a report for the Library Committee.

G. B. Thornton, Chairman of the Committee on Epidemics, made a verbal report of the inspection service on the Mississippi river, and of the April meeting of the Sanitary Council of the Mississippi Valley, which he attended as a delegate from this Board. He said that the Council decided to maintain the inspection service on the river, as it was organized by the National Board of Health. The inspection service was opened May 15. The Council decided to maintain it; Memphis would maintain the inspection at that point. For the maintenance of the inspectorship at New Orleans, voluntary contributions were expected from Boards which were members of the Council.

After a full discussion of the inspection and quarantine service was engaged in by all the members of the Board, P. D. Sims moved that the whole question be referred to the Executive Committee, with power to act, and that the Secretary communicate with the Secretary of the Sanitary Council of the Mississippi Valley.

This motion was carried unanimously.

G. B. Thornton made inquiry as to the Executive Committee of the Board as it now exists.

After discussion, it was moved by Col. Cole that the rule adopted at the April meeting, which constituted the resident members of the Board the Executive Committee, be reconsidered.

The motion prevailed.

It was thereupon moved and carried that "the Executive Committee shall consist of the President, Vice-President and the Secretary, who are the Executive Officers of the Board."

Col. Cole moved that the request of the Secretary for quarterly settlements be granted.

The motion prevailed, and the Chairman of the Finance Committee was requested to act as a committee to make said settlements quarterly.

The resignation of Hon. John Johnson, of Memphis, as a member of the Board, was accepted, and the election of a successor was postponed, under the rules, to the next meeting.

E. W. Cole made a verbal report of his settlement with the former Secretary.

Upon motion of J. D. Plunket, the report was referred back to the Committee, with the request that the vouchers and receipts be compared with the accounts, and a report made in writing in October. The Secretary and the ex-Secretary were expected to assist the Committee.

Adjourned.

QUARTERLY SESSION, OCTOBER, 1883.

NASHVILLE, Oct. 2, 1883.

The State Board of Health, in regular quarterly meeting, met at the office of the Board in the Capitol, at 11:30 A.M., October 2, Dr. T. A. Atchison, of Nashville, the President, in the chair. There were also present Dr. Jas. M. Safford, of Nashville, Vice-President; Dr. P. D. Sims, of Chattanooga, Dr. J. D. Plunket, of Nashville, Col. E. W. Cole, of Nashville, and the Secretary, Dr. C. C. Fite.

SECRETARY'S REPORT.

The Secretary made the following report:

TENNESSEE STATE BOARD OF HEALTH,
NASHVILLE, October 2, 1883.

To the President and Members of the Tennessee State Board of Health.

GENTLEMEN:—In accordance with the action of the Board at its July meeting, the Executive Committee met July 6, to consider matters delegated to it by the Board. The President and Secretary being present, the Vice-President being out of town at the time, the action of the Committee was afterwards submitted to and approved of by him.

It was agreed that the views of this Board in regard to the quarantine and inspection service in the valley of the Mississippi should be expressed in a letter to the Secretary of the Sanitary Council of the Mississippi Valley. Dr. J. H. Raach. Said letter was dated July 7, and a copy thereof is hereunto attached. After the publication of this letter the Committee had further correspondence with Dr. G. B. Thornton, President of the Memphis Board, and July 16 it was decided that an order be issued empowering the Memphis Board to carry out the designs of this Board in that particular, and an order was promulgated to that effect on the 19th July. The following is a copy of said order:

QUARANTINE ORDERS GOVERNING STEAMBOATS ON THE MISSISSIPPI RIVER AT TENNESSEE POINTS.

TENNESSEE STATE BOARD OF HEALTH,
NASHVILLE, July 19, 1883.

It is hereby ordered that on and after this date, and until further orders, all boats on the Mississippi river coming from points south

of this State, will be required to land at the Inspection Station, at President's Island, and be inspected by the medical officer in charge, before they will be allowed to land at any point in this State; and the Board of Health of the Taxing District of Shelby county is hereby authorized and empowered to execute this order.

Certificates of inspection in New Orleans by the Inspectors of the Sanitary Council of the Mississippi valley will be recognized at the Stations, as will also the certificates given at Fort Adams and it is therefore suggested that all boats from points below this State provide themselves with such certificates, so as to avoid delay.

C. C. FITE, *Secretary*,

And Executive Officer of the Board of Health of the State of Tennessee.
Approved,

T. A. ATCHISON, *President*.

JAS. M. SAFFORD, *Vice-President*.

The inspection service was kept up by Memphis at President's Island until the 15th of September, when the order was rescinded.

The yellow fever at Pensacola caused no little alarm throughout the country, and the Executive Committee was on the alert constantly. Some correspondence was had with the National Board, and with the Alabama and Mississippi Boards, and the Memphis and Chattanooga Boards, in regard to measures of defense, but fortunately there was no cause for action.

Small-pox has caused very little trouble during the quarter just ended, but there is an abundance of material for the disease in the State, and, unless Local Boards are vigilant and prompt, there will be danger of the disease appearing at a number of points, as it did last winter. There was one death at Brownsville, July 8, but every precaution having been taken, there were no other cases. Dr. C. R. Taylor and Dr. W. W. Taylor kept this office informed of the circumstances. Two cases have been reported in Nashville, and in the country outside of Nashville, forty cases.

A resolution passed by the Medical Society of the State of Tennessee, at its meeting in April, in regard to vaccination, is presented with this report for the action of the Board.

The American Public Health Association will be in session at Detroit, November 13th to the 16th. The subjects for special consideration will be malaria, foods, vital statistics and house sanitation. Interesting reports from the special committees on compulsory vaccination and the management of epidemics are expected.

Respectfully submitted,

C. C. FITE, *Secretary*.

Col. E. W. Cole, of the Committee to settle with the former Secretary, reported that owing to the illness of that gentleman he had not been able to attend to the settlement. The Committee was continued.

The following report was read from Dr. W. C. Cook, the Davidson County Health Officer, respecting the authority of Health Officers in remanding small-pox patients to a hospital provided for the purpose :

NASHVILLE, Oct. 2, 1883.

To the Hon. State Board of Health :

GENTLEMEN—A communication from your Secretary, inquiring as to the number of cases of small-pox which have occurred in Davidson county, outside the corporate limits of Nashville, for the last quarter, ending September 30, came duly to hand, and, in reply, would say there have been 40. Of these, there were 18 males, 22 females, 33 colored, 2 white; 6 adults, 34 minors, 12 died, 20 were discharged, and there remain 8 in bed.

The Honorable Board will permit me, I trust, to direct their minds, as I did at your April meeting, to an act of the last Legislature, creating County Health Officer, on page 311, Acts of Tennessee, 1883, and especially to section 2 of the same, pertaining to the duty of County Health Officer, which reads as follows :

"And whenever epidemic diseases are either threatened or developed in his county, it shall be his duty to at once communicate the fact to the State Board of Health, and he shall adopt and carry into effect such rules and regulations as may be prescribed by said Board, having for their object the stamping out or restricting the spread of such epidemic diseases in his county."

At the April meeting of your Board, in compliance with the law, I notified you of the existence of small-pox in this county, and called for such rules and regulations from your Honorable Board as were, or might be, placed in your hands by the law of the land. I furthermore requested of you a construction of that law creating County Health Officer, that his duties to the community, to the State Board of Health, and the duty of the State Board of Health to him and to the people likewise, might be, to the advantage of all, fully set forth, to subserve the ends of justice to all in emergencies.

Notwithstanding we have assiduously endeavored to suppress and restrict the spread of small-pox, by all the authority at our disposal, we still have a few cases in our midst, and will, apparently,

for some time to come. We find ourselves embarrassed, first, by a considerable per cent. of persons who have never yet been successfully vaccinated, secondly, some, also, who will not be vaccinated at all, thirdly, the county has in readiness a comfortable hospital for the reception of small-pox patients; the great bulk of them will not, and cannot, by any kind of influence, be induced to enter it. They say they cannot be forced, *legally*, to go there. So we are left to the whims of the afflicted. The subject is one of moment. Has any officer, either through the State Board of Health, or otherwise, the constitutional or legal power to remove a case of small-pox to a hospital prepared to receive him? In the interest of our County Court and our people, and the laudable ambition to know and do my duty, I insist upon a construction of the law.

Our County Court, after much discussion of the subject, with the view, if possible, of ridding themselves of the pest, yesterday passed the following resolution, with regard to which I would be pleased to hear an expression from your Board. The resolution is as follows:

Be it Resolved by the County Court of Davidson County, Tenn., That the County Health Officer and Pest-House Committee be, and they are hereby authorized to remove to the county pest house all cases of small-pox or other contagious diseases which are likely to become county charges, as they may deem best under all the circumstances surrounding each case."

I would suggest, that if the law gives the State Board power to prescribe rules and regulations for stamping out and restricting the spread of epidemic diseases, through Local Boards of Health or County Health Officers, they surely cannot be expected to perform such duty, unless directed specifically by the State Board of Health to do so.

Finally, therefore, if there be power lodged with any of the officials in any department of our State's law, by which any person may be removed on account of being the subject of any contagious or epidemic disease, to a hospital prepared for them, against their solemn protest, or their persistent refusal, such power should be shown and exercised, otherwise whole communities of good and law-abiding people are subject to the destructive spread of such diseases. Simply as an inquirer after truth, and that I may have all legal light possible in the discharge of my duty, I submit the foregoing report.

Respectfully,

W. C. COOK, M. D.,
Davidson County Health Officer.

Dr. Cook was, upon motion, invited to be present at the meeting of the Board.

Dr. Cook made a statement in regard to the work.

After Dr. Cook had given a detailed history of the small-pox in his county, and all the points involved, the Board engaged in a discussion in regard to the situation—the question as to the authority of the Board to enforce compulsory vaccination, and the removal of patients to hospitals.

Col. E. W. Cole moved that the Executive Committee secure an opinion from Judges East and Baxter upon the powers of the Board, under the State law, in regard to the question, and also that the Governor secure an opinion from the Attorney-General. The Board held the opinion that the law was explicit and that it should be enforced, but the opinion of legal talent was desired before County Health Officers were instructed to enforce the law.

The Board, after approving accounts, adjourned to meet at 2:30 P.M.

AFTERNOON SESSION.

NASHVILLE, Oct. 2, 1883.

The Board met pursuant to adjournment.

The resolutions of the Medical Society of the State of Tennessee, passed at its last meeting, requesting the Board to institute measures to have laws passed enforcing compulsory vaccination, were received and filed.

The election of a successor to Hon. John Johnson was postponed.

A motion was carried to appoint two delegates to represent the Board at Detroit in November, at the meeting of the American Public Health Association, the President to make the appointment.

The President was, by motion, added to the delegation.

The Board then adjourned to the next regular meeting, January 1, 1884.

QUARTERLY SESSION, JANUARY, 1884.

NASHVILLE, JANUARY 1, 1884.

The State Board of Health met January 1, at 11 o'clock, in the Capitol. There were present Dr. T. A. Atchison, President; Dr. Jas. M. Safford, Vice-President; Col. E. W. Cole, Dr. G. B. Thornton, Dr. P. D. Sims, Dr. J. D. Plunket, and the Secretary, Dr. C. C. Fite.

The Executive Committee reported that they had attended to the matters delegated to them at the October meeting. The report of the Committee in regard to legislation was temporarily laid on the table.

The Chairman of the Epidemic Committee, Dr. G. B. Thornton, made a report for Memphis, saying there had been, in the last three months, only three cases of small-pox in Shelby county. Dr. Thornton said his report for 1881 and 1882 was ready for publication.

Dr. James M. Safford reported that his report on the climate and water of Tennessee would not be completed for some months.

Col. E. W. Cole, of the Committee to settle with the former Secretary, made a report, which was received and ordered spread on the minutes. The report showed that the former Secretary had settled with the Board in full.

FILLING THE VACANCY.

Dr. G. B. Thornton put in nomination Hon. David P. Hadden, President of the Shelby County Taxing District, as a member of the Board, to fill the vacancy caused by the resignation of Hon. John Johnson.

The President was instructed to cast the ballot for the Board, and Mr. Hadden was elected.

The Secretary was instructed to notify the Governor of the election, and that Mr. Hadden then be notified after the consent of the Governor had been obtained.

A TEST CASE.

Dr. J. D. Plunket offered the following resolution:

"Resolved, That the Secretary be directed to proceed at the earliest possible time to ascertain the legal powers of the Board, through the courts, by securing if possible an agreed case, upon which to obtain the rulings of the courts for its future action as to the Board's authority and duty in dealing with small-pox, as to the removal of cases to small-pox hospitals, and compulsory vaccination, etc."

After a full discussion, engaged in by all the members of the Board, the resolution was referred to the Executive Committee, with power to act.

SECRETARY'S REPORT.

The Secretary's report was then read as follows:

TENNESSEE STATE BOARD OF HEALTH,
NASHVILLE, Dec. 31, 1883.

To the President and Members of the State Board of Health

GENTLEMEN—At the October meeting of the Board a resolution was adopted directing a catalogue of the library published. This has been done, and copies distributed to the members of the Board and to various other boards and libraries.

During the sessions of the American Public Health Association at Detroit, there was an informal conference of members and Secretaries of State Boards, and it was resolved to invite all State Boards to send a representative to Washington in May, to confer as to matters coming peculiarly under the jurisdiction of State Boards.

It is desirable that this Board designate such delegate, as there will be some correspondence before the meeting in May. A circular letter in regard to this question has been received at this office and is appended to this report.

Dr. J. B. Murfree, President of the Murfreesboro Board of Health, reported a case of small-pox at that place October 5. The patient a young man, had returned from Nashville, and was taken down with the disease. The case being promptly attended to, there was no other case. October 28 there was a similar case and a simi-

lar result, showing conclusively the efficiency of prompt measures. Delay is the cause of the trouble at most points. A resident of Gadsden, Crockett county, went to the Louisville Exposition, and on returning home was taken ill, and the nature of the disease not being discovered at once, and even after it was discovered, the people in the community were slow to take active measures. After some delay, Dr. R. J. Williams induced the people to be vaccinated, and N. J. Hess was called in and took charge of the cases.

After some correspondence with Dr. Williams, the cases were visited, and those in charge advised as to the proper methods of controlling the epidemic. Dr. Hess, the Health Officer, and Dr. Williams, President of the Local Board of Health, have done their utmost, but the county authorities have done nothing. They have been advised repeatedly to do so, and the citizens of Gadsden at last were forced to appeal to the outside world for help. It is hoped that the County Court will take the matter in hand soon. There are no new cases there now, however, and the epidemic is at an end, temporarily at least.

December 22d, I received a letter from Dr. P. F. Gould, of Johnsonville, stating that there were two cases of small-pox there, and that there had been one death.

The Hon. Dorsey B. Thomas wrote requesting that the place should be visited. This was done, an engagement having been made by telegraph to meet with Dr. Gould, Mr. Thomas and Judge J. J. McCauley, Chairman of the County Court.

After conferring in regard to the situation, Dr. H. T. Gould, son of Dr. P. F. Gould, was appointed Health Officer, and a guard and nurses were appointed to assist him, Judge McCauley doing what the law requires of County Courts in such matters.

NASHVILLE HEALTH OFFICE.

The following is the report of the Nashville Health Office:

DECEMBER 31, 1883.

C. C. FITE, M. D., *Secretary State Board of Health:*

DEAR DOCTOR:—The following is a summary of small-pox cases reported within the city of Nashville from October 1, 1883, to January 1, 1884.

White,	-	-	-	-	-	-	2
Colored,	-	-	-	-	-	-	44
Total,	-	-	-	-	-	-	46

The disease shows no disposition to assume an epidemic form, the

cases that have been reported being isolated, and due to the contagion in the county of Davidson beyond the corporate limits of the city. The preponderance of cases among the colored population is due to the migratory disposition of these people, their disregard of all hygienic rules in their habits of life, and the inability of the authorities to overcome their ignorant prejudice against vaccination, which makes them evade the vaccinators in their rounds. It is confidently believed that little material is left in the city upon which the disease can feed, and that its existence at present need cause no fears of a general spreading.

Yours truly,

RICHARD CHEATHAM, M. D.,
Health Officer.

No report has been received from the Davidson County Health Officer.

Respectfully,

C. C. FITE, *Secretary.*

The report of the Secretary of the Knoxville Board, Dr. S. B. Boyd, was also presented as a part of the report. There has been no small-pox in Knoxville for eight months.

The circular letter in regard to the State Boards of Health Conference was referred to a Special Committee, consisting of Drs. Plunket, Sims and Thornton, who were instructed to report at the next meeting.

The Secretary was instructed to ascertain the facts in regard to the epidemic disease at a seminary in Wilson county, and visit the locality if necessary.

A resolution presented by Dr. G. B. Thornton in regard to cities in the State publishing annual reports, was adopted.

After some routine business, the Board adjourned to meet on the first Tuesday in April.

QUARTERLY SESSION, APRIL, 1884.

MORNING SESSION.

NASHVILLE, April 1, 1884.

The Tennessee State Board of Health met Tuesday, April 1, at 11:30, in the office of the Board at the State

Capitol. There were present Dr. T. A. Atchison, President; Dr. J. M. Safford, Vice-President; Dr. J. D. Plunket, Hon. E. W. Cole, of Nashville, and Hon. David P. Hadden and Dr. G. B. Thornton, of Memphis, and the Secretary, Dr. C. C. Fite, of Nashville.

The minutes of the January meeting were read and approved.

The Secretary then read his report, which is as follows:

SECRETARY'S REPORT.

NASHVILLE, March 31, 1884.

To the Tennessee State Board of Health:

GENTLEMEN.—The following report for the quarter ending to-day is respectfully submitted:

Measles has prevailed throughout the State during the winter and is still prevalent.

Small-pox has been reported at the following places:

A case made its appearance at Centreville, Hickman county, early in January, and that place was visited January 15. Dr. James L. Thompson was appointed County Health Officer, and by prompt and intelligent action soon suppressed the outbreak. There were six cases in all. Dr. Thompson's report is on file.

A case occurred at Buford's Station, Giles county, January 29. Dr. George D. Gray was put in charge and made an efficient battle against the disease. He has forwarded a complete report of the outbreak. There were nine cases at Buford's.

Dr. N. T. Hess, in charge at Gadsden, had only three cases after he made his report in December, and on January 9, left that place for his home. There have been no more cases there.

There was a case at Cumberland Furnace, January 14. The patient afterwards died, and there was another case, January 31. There was a local Board of Health organized, with Mr. T. S. Curtis as Secretary. The furnace laborers were all vaccinated, and no other cases reported.

A case was reported at Charlotte, and a Board of Health organized, and it has since been ascertained that it was a case of measles.

As stated in my January report, Dr. H. F. Gould was acting as Health Officer at Johnsonville. There have been four cases at that point since January 1, and another case was put off the steamer Gilbert there last week.

Prof. T. W. Perfect, Principal of the Saltillo Academy, reported,

February 26, that small-pox had appeared near that place. He wrote March 11, that there had been 14 cases, with three deaths. All the cases were in one family, which was isolated, and the community vaccinated. There have been no more cases.

Dr C. W. Beaumont, Health Officer of Clarksville, reported January 5, that there were four cases there. Since that date there have been eight cases in the city and three in from the country in the hospital. Including the cases there in December, there have been twenty eight, with eight deaths. Dr. N. L. Carney, County Health Officer, had two cases outside the city. Dr. Carney also visited a case in Danville, January 15.

There have been four cases at Grant, Smith county. The first two cases died from neglect. Dr. R. E. Johnson was finally, after vexatious delay, put in charge by the county authorities, and the other cases recovered. If these cases had occurred in a thickly settled community there would doubtless have been an extensive outbreak, as the indifference to proper measures was phenomenal.

Dr J. B. Richmond has had charge at Baird's Mills. The first case occurred about January 21. There have been since that date nineteen cases, with six deaths, confined to two families.

A case is reported at Jackson. The patient was promptly removed to the pest-house.

Only two cases of small-pox in Memphis during the quarter. Both cases went to the Shelby County hospital.

Dr. Richard Cheatham of this city, was called to Woodbury, March 19, to see a case in the person of a Mr. Spurlock, who went from Nashville and died there that day. No other cases reported as yet.

The last report from Savannah was to the effect that there had been 50 cases with 14 deaths. All the cases except one were colored. Dr. R. A. Hardin has been using every effort to isolate the cases and vaccinate the community.

Dr C. Mitchell, Health Officer, reports that there have been in Nashville during the past three months, 47 cases; 41 of these cases were taken to the hospital. Of the 47 cases there were five white, none of whom had been vaccinated.

Dr W. C. Cook, Davidson County Health Officer, reports that there have been in the county, outside the city, 160 cases, whites, 27, colored, 133, deaths, 30, sent to the hospital, 79, remained at their homes, 11 cases. Dr. Cook stated further, that the order of this Board, of March 11, 'has not only met with general satisfaction, but has been practically efficacious in infected localities,' and he expects to be able to see an early decline of the disease. The

colored population and the lower classes of whites avoid vaccination, hence the continuance of the infection.

A communication from the Hon. Dorsey B. Thomas is submitted. It is in reference to small-pox being put off of steamboats at points along the Tennessee river. This has caused a great deal of trouble, and the counties along the river have been put to great expense caring for these steamboatmen, whereas, their charge properly belongs to the Marine Hospital Service, as they pay, each a monthly stipend, to be provided for in case of illness or injury. The counties, therefore, not only have to provide for them, but see their citizens die from the loathsome disease brought by the wards of the Government to their very doors.

It has been easier to suppress outbreaks of small-pox this year than it was last year or the year before. This is due to the fact that prompt action is taken and the virus now generally in use is a superior article, which could not be said of that heretofore on the market. The virus which I always recommend is that propagated by the National Vaccine Establishment at Washington, under the direction of Dr. Ralph Walsh. It is pure, reliable and certain in action.

Acting under the instructions of the Executive Committee, I attended the meeting of the Sanitary Council of the Mississippi Valley, at Memphis, March 21, and in conjunction with Dr. G. B. Thornton and the Hon. David P. Hadden, represented this Board. Dr. Baker, of Michigan, offered a resolution strongly condemnatory of the Marine Hospital Service and its interference with National Sanitation. This was modified by the Committee on Resolutions, and even then failed before the Council, it being held that it was not good policy to pass it. The Committee offered another resolution, which passed unanimously, requesting Congress to pass the Casey Young Act, also instructing the Executive Committee to take the same steps that were taken last summer, should the occasion require. The policy of the Council is therefore unchanged. It adheres to the methods in vogue heretofore, and the same that were promulgated by this Board last year under its quarantine order of the 19th July.

The day succeeding the meeting of the Council was devoted to an examination into the detail methods of the Memphis Board of Health and the sewerage system. The ground was gone over with Maj. A. Ross, the Assistant City Engineer, in charge, who explained the working of the tank and the methods of keeping in repair and cleaning the laterals and main sewers. The question of drainage and water supply were all carefully examined and much valuable information was obtained.

Lebanon was visited January 5, as per instructions of the Board,

to examine into the typhoid fever epidemic which occurred in Maple Hill Seminary, near there. A special report will be made in regard to it.

The Nashville Board has not published an annual report, but has issued a mortality statement for 1883, which gives the information desired by this Board.

Dr. E. M. Eaton, Secretary of the Chattanooga Board, writes that the Board has done little active work recently, and has published no report.

Judge Pitkin C. Wright, agent of the Hartford Life and Annuity Insurance Company, has referred to this office a letter from his company, instructing him not to issue policies in the counties of Bedford, Gibson, Henry, Robertson, Rutherford and Sumner. The question is submitted to the Board whether those counties show an unusually heavy death rate. If not, such instructions are detrimental to the reputations of said counties.

Respectfully submitted,

C. C. FITE, *Secretary.*

The report was received and ordered filed.

The Executive Committee submitted the following reports concerning the instructions of the Committee to County Health Officers in regard to the management of small-pox, and also regarding the removal of patients to hospitals, and vaccination.

NASHVILLE, March 31, 1884.

To the Tennessee State Board of Health.

GENTLEMEN Your Executive Committee begs leave to report that the resolution passed at the January meeting in regard to the legal power of the Board in certain cases has been carefully considered. It is believed by the Committee that a case of the nature referred to would go adversely, and they therefore report, that, in their opinion, no action should be taken. If the Board so desires, the Legislature can be memorialized to pass a law giving the power desired.

Respectfully submitted,

T. A. ATCHISON,

JAS. M. SAFFORD,

C. C. FITE,

Committee.

NASHVILLE, March 31, 1884.

To the Tennessee State Board of Health.

GENTLEMEN—Your Executive Committee, acting under instructions formerly given, issued the following order to the Davidson County Health Officer:

TENNESSEE STATE BOARD OF HEALTH,
NASHVILLE, March 11, 1884.

To W. C. COOK, M. D., *Health Officer of Davidson county.*

The State Board of Health learns with regret that small-pox still lingers to some extent in the county of Davidson. As the only means to its thorough eradication and prevention, it is ordered that vaccination be again and again repeated until all persons in the exposed districts have been fully brought under its protective powers. To this end, pure virus, either humanized or bovine, should be carefully selected and placed in the hands of skilled physicians. The means necessary to this work must be supplied under the law, by the county authorities.

It is further ordered that reliable persons be employed to disinfect patients' clothing, furniture and habitations. After complete recovery, patients may be discharged after a thorough bathing and dressing in a fresh and well disinfected suit of clothes. All clothing and bedding should be boiled for three hours, the contents of bed-ticks burned, and the room should be tightly closed and thoroughly fumigated with burning sulphur. For further information touching these matters, you are referred to a circular issued by this Board. A copy thereof is herein inclosed and made a part of this order.

It is believed by careful attention to these methods of disinfection, the destructive waste of property can be avoided. You are authorized and empowered to place a yellow flag, as a signal of danger, in front of premises where the disease exists.

It is further ordered, that when a case of small pox is developed in a locality, that you shall have discretionary power to isolate or quarantine the case until all exposed persons shall have been successfully vaccinated. This order to take effect at once.

T. A. ATCHISON, *President,*

JAS. M. SAFFORD, *Vice-President,*

C. C. FITE, *Secretary,*

Executive Committee.

Respectfully submitted,

T. A. ATCHISON,

JAS. M. SAFFORD,

C. C. FITE,

Committee.

The reports were received, approved and adopted.

The Secretary then read special reports on the small-pox at Centreville, by Dr. James L. Thompson, and at Buford's

Station, by Dr. Geo. D. Gray, which were referred to the Committee on Epidemics.

The following report of the Secretary, on the epidemic of Typhoid Fever at Maple Hill Seminary last autumn, was then read :

TYPHOID FEVER, MAPLE HILL SEMINARY, LEBANON TENN.

To the Tennessee State Board of Health.

GENTLEMEN In obedience to a resolution of this Board at the January meeting, I visited Lebanon, January 5th, 6th and 7th, and in company with Dr. James L. Fite, of that place, went to Maple Hill Seminary on Sunday, January 6th. The following interesting report will give you in detail the history of the epidemic. I found only two criticisms to make on the arrangements at the Seminary. The well water is very strongly impregnated with lime and sulphur, and the out-houses are situated over a cave, into which heavy rains wash all accumulations. It looked possible that there might be a communication from this cave to the well, but I am informed by Dr. Safford that is not likely to be the case in these sulphur wells, as their flow is rarely affected by rains. The cases were evidently caused by the servant girl mentioned in the report. Whether the cases were by direct contagion or through the water supply is not known.

Professor Hancock, the Principal of the Seminary, was advised to build an underground cistern and move the out house away from the cave, as it would likely damage springs in the valley below, even if it did not contaminate the well. A letter from Dr. M. W. Cowen, whose practice is largely on Barton's creek, shows the probable origin of the contagion. The letter is appended to this report.

LEBANON, TENN., January 20, 1884.

DR. C. C. FITE, *Secretary State Board of Health:*

DEAR SIR—I write at your request, as far as I can from my notes a history of the epidemic of fever that prevailed at Maple Hill Seminary during the months of September, October, November and December, 1883. The school is located on the Lebanon and Nashville turnpike, three miles west of Lebanon. The location is on an elevation that has perfect natural drainage. The building is entirely new, none of it older than three years. It is a frame house, well built with large, airy, well ventilated rooms, the ventilation under the house is good, has one shallow dry cellar, no ponds or marsh ground near. During the three years of the existence of the

school, it has been remarkably healthy. The neighborhood is as salubrious as any locality in the county. The school building is a comfortable, thoroughly ventilated house, about fifty yards from the living house. Water is supplied from an upground cistern, and a bored-well forty feet deep. The well water is slightly sulphur. From these two sources the school has been supplied with water since its organization.

There were in the building, when the school opened, August 27th, including teachers and servants, eighty-five (85) persons. The first case occurred in a servant girl, about a week after school opened. She had been visiting in a neighborhood on Barton's creek, where there had been cases of fever of a continued type. About eight days after she first complained, still on foot, she was sent to her home, one and a half miles from Maple Hill, where she died of typhoid fever, October 10th.

Professor Harris was taken sick September 30th, another boarder October 16th; cases occurred through October, November and December, until there were in all eighteen cases. Thirteen of these cases were treated by me. Five were treated by other physicians at their homes. Of the five treated by other physicians, I learn that four recovered and one died of a pneumonic complication. Of the thirteen cases treated by me, one, the servant [girl], died at the end of three weeks, from exhaustion and "negro preaching." One, a pupil, died from intercurrent pneumonia at the end of seven days. Several pupils complained from two to four days with headache, malaise, badly coated tongue and some fever, these were treated with small doses of calomel, followed by large doses of quinine.

The school was disbanded December 1st, the pupils placed in homes in the neighborhood and in Lebanon. Four cases occurred after the school was disbanded, only one of whom was brought back to the Seminary for treatment. Two of the others I treated at their homes. The young lady who was ill at the time of your visit to Maple Hill, is now well and back in her class. No case of any kind in the school since it re-assembled, January 14th. Before the school was re-called the buildings were thoroughly cleaned and disinfected. The bedding was exposed for two days out of doors, during the coldest weather of the winter. The blankets, sheets, etc., were boiled. The rooms were fumigated with burning sulphur. During the existence of the fever, the room vessels were kept constantly supplied with a solution of ferri sulph. All excreta were promptly removed and buried.

Please find a table of cases appended.

Very truly yours,

JAMES L. FITE, M. D.

TYPHOID FEVER, MAPLE HILL SEMINARY, NEAR LEBANON.

CASES.	TOTAL.	DR. J. L. FITE Treated.	OTHERS.
Total number of cases.....	18	13	5
Average duration of cases.....	(13)	20 days.	1
Number of deaths.....	2	2	
Shortest period to convalescence.....	(13)	14 days.	
Longest period to convalescence.....		30 days.	7 days
Shortest ending in death.....		7 days.	
Longest ending in death.....		20 days.	
Date of first case.....		Sept. 5th.	
Date of last case.....		Dec. 17th.	
First case removed from Seminary to home..		Sept. 12th.	
Second case appeared.....		Sept. 30th.	
Third case appeared.....		Oct. 16th.	
Fourth case appeared.....		Nov. 8th.	
Fifth, sixth and seventh cases appeared.....		Dec. 1st.	
Eighth case appeared.....		Dec. 3d.	
Ninth and tenth cases appeared.....		Dec. 5th.	
Eleventh and twelfth cases appeared.....		Dec. 13th.	
Thirteenth case appeared.....		Dec. 17th.	

Nos. 14, 15, 16, 17 and 18, occurred away from Seminary soon after school disbanded (Dec. 1st) and were treated by other physicians.

Case No. 1 was the servant girl referred to in report. J. L. F.

LEBANON, TENN., March 25th, 1884.

C. C. FITE, M. D., *Secretary State Board of Health*

DEAR DOCTOR—I received yours of February 26th, some time since but in consequence of pressing engagements have failed to comply with your request.

We had about thirty cases of typhoid fever. Nothing positive as to contagion, except in one case, Walter B., æt 18, came from Nashville, said he had waited on a young man in Nashville who had typhoid fever. We were inclined to the opinion that most of the cases were caused by impure water. The first cases had been using water from a top ground cistern, in fact, all the cases, with but few exceptions (one or two), had been, up to the time of the onset of the fever, using bad water. Number of deaths, four. Immediate cause of death in two cases, hemorrhage from the bowels; other two, perforation and consequent peritonitis.

I remain, respectfully yours,

M. W. COWEN, M. D.

All of which is respectfully submitted.

C. C. FITE, *Secretary*.

The report and letters were referred to the Committee on Epidemics, and the Board adjourned to 2:30 P. M.

AFTERNOON SESSION.

NASHVILLE, April 1, 1884.

Dr. G. B. Thornton made inquiry as to the law in regard to County Health Officers.

The act referred to was read, and Dr. J. D. Plunket offered the following resolution, which was adopted :

Resolved, That the County Health Officers of all counties acting under chapter 233, section 2, of an Act approved March 29, 1883, be and they are hereby required to make to the State Board of Health a written report at each quarterly meeting of the Board, or oftener, as said Board may require, regarding contagious or infectious diseases occurring in their respective counties.

A letter was read from the Hon. Dorsey B. Thomas in regard to the small-pox on the Tennessee river. The letter was referred to the Committee on Epidemics, with instructions to report at the morning's session.

The communication in regard to the prohibition of insurance risks in certain counties, was referred to the Committee on Vital Statistics. A letter was read from Dr. E. M. Eaton, Secretary of the Chattanooga Board of Health, in regard to the little interest shown by the Board and by the City Council in the sanitary necessities of that city. The question was postponed until the following day, when Dr. Sims would have arrived.

The Board adjourned to meet at 11:30 o'clock, A. M., April 2.

SECOND DAY'S MEETING—MORNING SESSION.

NASHVILLE, April 2, 1884.

The Board met pursuant to adjournment at 11:30 A. M. There were present: Dr. T. A. Atchison, President ; Dr.

James M. Safford, Vice-President; Col. E. W. Cole, Dr. J. D. Plunket, of Nashville; Hon. D. P. Hadden, Dr. G. B. Thornton, of Memphis, and Dr. P. D. Sims, of Chattanooga, and the Secretary.

The report of the Chairman of the Committee in regard to the prohibition of insurance in certain counties, was received and adopted.

The correspondence referred to the Committee, is as follows:

NASHVILLE, TENN., March 29, 1884.

C. C. FITE, M. D., *Secretary State Board of Health*:

DEAR SIR.—The enclosed letter from the office of the above company, giving me some reasons for their refusal to accept risks from certain counties, is evidently based on erroneous or mistaken information. Will you do me the great favor to bring the matter therein contained to the attention of the State Board, as it is a subject affecting the vital statistics of the State, and I would like their opinions thereon.

Yours truly,

PITKIN C. WRIGHT.

HARTFORD, CONN., March 1, 1884.

PITKIN C. WRIGHT, Esq., *Nashville, Tenn.*:

DEAR SIR.—Your communications upon the subject of prohibited counties in Tennessee are before me for the purpose of making explanation of the cause of our action.

That you may know that our action is not without due warrant in the premises, we have to say that we have in hand the combined experience of American Companies in your State, and the facts show as follows:

The six counties of Bedford, Gibson, Henry, Robertson, Rutherford and Sumner show among insured lives a death loss of \$158,300, while the Tabular Mortality, corresponding to the amount at risks, shows that the loss should have been only \$68,106; hence, showing more than double the loss that there should have been—in fact, \$136,212 more than the policy holders in that group of counties paid or contributed toward mortality. Now, look at the experience in the three counties of Shelby, Fayette and Obion, the mortality of which is to be attributed in a great degree, to the specially excessive mortality of the Memphis district. These three counties, in fact, show a trifle better than the group of six before mentioned, viz. \$1,521,016 actual mortality to \$701,683, tabular mortality, while the balance of the State shows only \$582,805, actual mortality,

to \$613,859, tabular mortality, showing conclusively that if you leave out the nine counties named the experience was good; in fact, did not quite equal the tabular mortality.

We have laid these facts before you—and they are actual facts gathered together from actual experience alone—to show that we are not acting through the influence of any wild guess-work in prohibiting work in those counties.

You are an intelligent, reflecting man, and if you sat here, called upon to exercise a proper control in the selection of risks, you would feel as we do, forced to govern the action by the coincidence in hand. It does not seem to us that the experience can be called accidental, and be treated as unlikely to recur, for it exhibits figures of sufficient size to warrant the conclusion that it is the rule, and not at all accidental. We cannot afford to disregard any danger signal that stares us so vividly in the face.

Yours truly,

STEPHEN BALL, *Secretary.*

To the President and Members of the State Board of Health:

GENTLEMEN:—After considering the communication of the Hartford Life and Annuity Insurance Company, bearing date of March 1, 1883, and addressed to Pitkin C. Wright, Esq., Nashville, Tennessee, referred to your committee, they respectfully report that the action of said company in prohibiting the taking of risks in the counties of Bedford, Gibson, Henry, Robertson, Ruthertford and Sumner is, to say the least, most extraordinary, inasmuch as the pretext for such action is stated to be the heavy mortality among the inhabitants of said counties. Now, as a matter of fact, the death rate of these counties is well known to be that of the average of any of the Middle States, while that of a large majority of the counties named is equal to, if not below the death rate of many of the so-called salubrious districts of America. The explanation, then, of the remarkable figures presented by this company in their communication must be sought for rather in their methods of business—in the possible reckless taking of risks which may have been pursued by them in the counties named.

Again, your Committee would submit for your consideration the accompanying letters from the State Manager of the Aetna Life Insurance Company, and from the local agents of the Mutual Life Insurance Company of New York, both of which companies rank at least as the peer of the Hartford Life and Annuity Insurance Company, and are, your Committee believe, equally as scrutinizing of the applicant and his environments as has become the Hartford Company in taking risks, and which communications show that the

REPORT OF THE SECRETARY.

"combined experience of American companies in your State" has not caused them to prohibit taking risks in either Bedford, Gibson, Henry, Robertson, Rutherford or Sumner counties.

All of which is respectfully submitted.

J. D. PLUNKET, *Chairman*.

April 2, 1884.

NASHVILLE, TENN., April 2, 1884.

J. D. PLUNKET, M.D., *Chairman*:

DEAR SIR: In reply to your inquiry as to whether the Mutual Life Insurance Company does business in the counties of Bedford Gibson, Henry, Robertson, Rutherford and Sumner of this State, we say that this Company does insure lives in every county in the State, but in that portion west of the Tennessee river, an additional charge is made during the epidemic season.

Very respectfully,

GALE, THOMAS & SHARPE, *Agents*.

NASHVILLE, TENN., April 2, 1884.

J. D. PLUNKET, M.D., *Chairman*:

MY DEAR SIR—In answer to your inquiry of this date, as to whether or not the Aetna Life Insurance Company does business in the counties of Bedford, Gibson, Henry, Robertson, Rutherford and Sumner of this State, would say it does, and in all other counties of the State, except those counties bordering on the Mississippi river, and in such counties at extra rate of about one-fourth ($\frac{1}{4}$) increase of rate.

Yours respectfully,

W. D. TALBOT, *Manager*.

The report of the Committee on the letter of the Hon. D. B. Thomas, was received and ordered spread on the minutes, together with the letter.

A motion was carried instructing the Secretary to act in accordance with the report of the Committee.

The report was as follows:

To the Tennessee State Board of Health

GENTLEMEN—Your Committee, to whom was referred the communication of the Hon. Dorsey B. Thomas, in reference to cases of small-pox being put off of steamboats on the Tennessee river, would respectfully recommend that your Secretary be instructed to address a communication to the Supervising Surgeon-General of the United States Marine Hospital Service, calling his attention to the evils complained of, and urging upon him the importance to our people

of his department taking such steps and inaugurating such rules and regulations as will furnish to the seamen such care as is due them, and thereby securing to the people of our State such protection as is sought.

G. B. THORNTON,
P. D. SIMS,
J. D. PLUNKET,
Committee.

The letter referred to is as follows:

JOHNSONVILLE, March 29th, 1884.

To the Tennessee State Board of Health:

GENTLEMEN—I wish to call your attention to the prevalence of small-pox at points along the Tennessee river, its causes, etc., and to ask that you take such steps as are within your power, and as your judgment may dictate, for its prevention.

It has, within the last twelve months, prevailed at several points on said river within this State, and particularly at this place. It is now here the third time. In every instance it has been brought here by hands off of steamboats plying between this river and points on the Ohio river. As you know, all these hands are required to pay monthly to support the Marine Hospital Service, and are entitled to treatment, and to be cared for in any marine hospital, in case of sickness or disability, free of charge. There is no marine hospital on the river nearer than Paducah, and I have never known a case of small-pox from our section that was sent to a marine hospital, nor any provision made for the care of such by that department. It has been a burden to our counties, besides the cause of the loss of the lives of many good citizens, and we are constantly and continually exposed to it, and without remedy on our part.

I respectfully ask that through your Board some action be taken that will give us relief in the future.

Respectfully,
D. B. THOMAS.

The question in regard to the Chattanooga Board was taken up and discussed, and the Secretary was instructed to address a protest to the Board in regard to their lack of interest, and failure to do the work contemplated by the State law.

Upon motion, the Secretary was ordered to publish in pamphlet form the transactions of each quarterly meeting of the Board.

The Hon. D. P. Hadden brought up the question of

quarantine on the Mississippi river, and asked the co-operation of the Board with the Memphis Board in the matter.

Assurance was given that similar orders would be issued as those of last year, and the Executive Committee would give prompt assistance, if needed, in accordance with the methods heretofore in vogue.

Adjourned to 2:30 P.M.

AFTERNOON SESSION.

NASHVILLE, TENN., April 2, 1884.

The Board met at 2:30 P.M., members present as at morning session.

The report of the Committee on the Conference of State Boards at Washington in May was presented. It recommended that the President of the Board be made a delegate without instructions. By motion, the Secretary was also made a delegate. The report as amended was adopted.

Moved that the delegates in no way compromise this Board in the contest now going on between the National Board and the Marine Hospital Service. Carried.

There was a full discussion of the questions of quarantine and national sanitation, and whilst the Board, as stated above, does not take sides in the personal issues involved, it clearly and distinctly takes position in favor of a well organized and properly conducted National Board of Health.

Dr. T. A. Atchison offered the following:

Resolved, That the Senators and Representatives from this State in Congress, be requested to use all honorable means in procuring the passage through Congress of the bill known as the Casey Young bill, having for its object the re-organization of the National Board of Health.

The resolution was adopted.

The nomination of members to fill the vacancies occasioned by the expiration of the terms of Dr. T. A. Atchison, Hon. E. W. Cole and the Hon. D. P. Hadden, was the next order of business.

Dr. T. A. Atchison said: "I have been long and pleasantly connected with you. I have not done all I should have done. In retiring from the Presidency, and also membership in the Board, I desire to thank you for numberless courtesies. I shall continue to do all I can to forward the great work you are engaged in, and to sustain the Board in its undertakings for the good of the public. I trust you will elect a successor who will have more time, more energy, to serve you. I must lay down some of my public duties, and, therefore, request you to relieve me of this one, both as to the Presidency and membership, as I cannot accept a re-election under any circumstances."

The Board expressed a high appreciation of his valuable services and eminent ability as a sanitarian, and regretted the severance of the pleasant and profitable association.

Dr. Atchison then retired, and the following resolution was unanimously adopted:

Resolved, That the sincere thanks of this Board are due, and are hereby tendered to our retiring President, Dr. T. A. Atchison, for the able, impartial and efficient manner in which he has discharged the duties of presiding officer, and for his zeal as a member in the investigation of sanitary science. In severing our relations with him as officer and member of the Board, by his voluntary retirement, we feel that we are parting with a most genial and efficient officer and member. He will carry with him in his retirement the most kindly feeling and the highest respect of the Board, both collectively and individually.

The Vice-President, Dr. Safford, took the chair, and Dr. Plunket put in nomination Dr. J. Berrien Lindsley to fill the vacancy. Dr. Lindsley was unanimously nominated.

Hon. E. W. Cole and Hon. D. P. Hadden were unanimously nominated to fill the other vacancies, and the Secretary instructed to transmit these three names to His Excellency, W. B. Bate, the Governor, as the law requires.

The Governor at once confirmed the nominations.

An election was then held for President and Vice-President, and Dr. J. B. Lindsley was elected President, and Dr. J. M. Safford Vice-President.

Dr. Plunket, Chairman of the Committee on Cattle Diseases, and their Relation to Mankind, was authorized to modify the scope of his report.

The President was authorized to revise the committees, and have the members notified of the constitution of each.

The following resolution was adopted :

Resolved, That there shall be a permanent committee, to be called the Executive Committee, to consist of the President and Vice-President, *ex officio*, together with the two other resident members. Two shall constitute a quorum for the transaction of business. They shall be clothed with all the powers possessed by the Board as such, and shall conduct the affairs of the Board during its interregnum.

The resolution was made rule 12 of the By-Laws.

A list of accounts against the Board was submitted and approved.

The Board then adjourned to the first Tuesday in July.

COMMITTEES.

The President, Dr. J. Berrien Lindsley, revised the Committees as follows :

STANDING COMMITTEES.

Vital Statistics—J. D. Plunket, G. B. Thornton, P. D. Sims.

On Prisons—P. D. Sims, E. W. Cole, D. P. Hadden.

Geological and Topographical Features of Tennessee in Reference to Sanitary Relations—J. M. Safford, P. D. Sims, J. B. Lindsley.

Epidemic, Endemic and Contagious Diseases—G. B. Thornton, J. D. Plunket, P. D. Sims.

SPECIAL COMMITTEES.

Water Supply of Tennessee—J. M. Safford, G. B. Thornton, P. D. Sims.

School Hygiene—J. B. Lindsley, P. D. Sims, G. B. Thornton.

Abattoirs—G. B. Thornton, J. D. Plunket, P. D. Sims.

Railroad Hygiene—E. W. Cole, D. P. Hadden, P. D. Sims.

Transmission of Tuberculosis from Milk and Meat of Infected Animals—J. D. Plunket, G. B. Thornton, P. D. Sims.

Inland Quarantine—D. P. Hadden, J. B. Lindsley, P. D. Sims.

QUARTERLY SESSION, JULY, 1884.

MORNING SESSION.

NASHVILLE, July 1, 1884.

The Tennessee State Board of Health met Tuesday, July 1, at 11:30, in the office of the Board at the State Capitol. There were present Dr. J. Berrien Lindsley, President; Dr. J. M. Safford, Vice-President; Dr. J. D. Plunket, Hon. E. W. Cole, of Nashville, and Dr. G. B. Thornton, of Memphis, and the Secretary, Dr. C. C. Fite, of Nashville.

The minutes of the April meeting, and of the special meeting May 29, were read and approved.

The Secretary read his report for the past quarter, together with a report of the State Boards of Health meeting at Washington, and special reports from the Davidson County and Shelby County Health Officers and the Nashville Health Officer.

SECRETARY'S REPORT.

NASHVILLE, June 30, 1884.

To the Tennessee State Board of Health:

GENTLEMEN: The following report for the quarter ending to-day is respectfully submitted:

Since the April meeting of the Board there has been a special meeting—May 29—and a meeting of the Executive Committee,

April 4. All the members of the Executive Committee were present. The President announced the committees as revised by him, and the Secretary was instructed to embody the list in the proceedings of the meetings of the Board.

Dr. Lindsley and Dr. Sims were appointed delegates to the State Medical Society, which was to meet in Chattanooga, April 8 and 9.

The Secretary was instructed to go at once to Savannah to investigate the small-pox epidemic at that point.

By a formal vote, the actions of the former Executive Committee were then endorsed by this committee, Dr. Plunket stating that in his opinion the former committee was not legally constituted.

The committee then adjourned.

The following report was made by the Secretary in regard to the

INSPECTION TRIP TO SAVANNAH.

NASHVILLE, April 6.

To J. BERRIEN LINDSLEY, M. D., *President*; JAS. M. SAFFORD, M. D., *Vice President*; COL. E. W. COLE, J. D. PLUNKET, M. D., *Executive Committee State Board of Health*:

GENTLEMEN: In obedience to your instructions of April 4, Savannah has been visited and the small-pox epidemic at that point investigated. It was found that there had been in all fifty-nine cases, commencing in January. Only one white person had had the disease. There had been fourteen deaths, and there are on hand now twenty-six cases, most of them convalescing. Thirteen of these cases were visited in company with Dr. R. A. Hardin, the attending physician. Dr. Hardin is President of the Board of Health and County Health Officer. Dr. J. K. Barlow is the Secretary. Judge Reuben East, Chairman *pro tem.* of the County Court, has given every assistance to these gentlemen. It was advised that a stricter guard be kept over the infected locality, which is a negro settlement, a mile from town, and that the vaccination be continued until the entire county was protected. This epidemic is due to a steamboat land, and it is the third time that the dreaded disease has been brought into the county in that way, and the people ask protection against these transient citizens, many of whom have never been vaccinated, although directly under the care of the Government, which guaranteed them medical services, and for which they are forced to pay in advance.

The officers of the steamer Nesbit said that there had been no order for general vaccination that they had heard of, that they would be only too glad if every boat land was vaccinated, and they thought a surgeon should come aboard every trip to attend to this when small pox was prevalent.

After leaving Savannah, Dr. Morris, at Adamsville, and Dr. Barry, at Purdy, were visited. Dr. Barry is County Health Officer of McNairy county, and had issued strict quarantine orders, but there had been no vaccinating done in that locality. The proper authorities were conferred with, and advised in regard to the course to pursue.

The trip was made by rail to Johnsonville; by steamboat to Savannah, 120 miles; from Savannah via Adamson and Bethel, 21 miles, in a buggy, and return by rail via Jackson, Union City and McKenzie.

Very respectfully,

C. C. FITE,

Secretary and Executive Officer State Board of Health.

This office was kept informed as to the condition of affairs until the close of the epidemic. Dr. Hardin has promised a full report of the epidemic.

At the meeting of the Board May 29, the resignation of your Secretary was presented and accepted, and Dr. Thornton was instructed to attend the quarantine conference at New Orleans.

Measles prevailed during the winter in various portions of the State and reports were received from the following points:

Dr. John I. Taylor, of Jackson, wrote April 8, that the first case appeared there February 10, and that it had spread extensively, and that there had been thirty deaths in Jackson up to that time. As the cases are not recorded, he could not even estimate the number, but said that it had been very extensive.

Dr. J. E. D. Scott reported that there had been about two hundred cases at Humboldt, with one death.

Dr. J. H. Smith reported that there had been one hundred and eighty-four cases in and near Trimble, with eighteen deaths.

Dr. C. W. Sebastin reported that there had been about three hundred cases in and near Martin, and ten deaths.

Dr. T. J. Happel, of Trenton, reported four cases there.

Dr. J. A. Dickey, of Bristol, reported about one hundred and fifty cases; no deaths.

Dr. S. B. Boyd, Secretary of the Knoxville Board, reported that the disease had prevailed continuously in Knoxville, but there were only seven deaths from this cause in 1883.

Dr. James A. Day reported a severe epidemic in Tazewell, but did not give the estimated number of cases or deaths.

Dr. C. W. Beaumont, Health Officer of Clarksville, reported fifteen cases as having been reported in that place; no deaths.

Dr. S. T. Evans, of Union City, wrote that in asking one of their physicians how many cases they had had, he answered: "Just send him the number of children in town and you won't miss it far." The epidemic was very mild, and few deaths.

Dr. W. A. H. Coop, of Friendship, wrote that there had been about thirty cases there; no deaths.

Dr. E. A. Cobleigh, of Athens, reported an outbreak of measles near that place, with twenty-five cases; no deaths.

Dr. C. Mitchell, Health Officer, makes a report in a communication which is appended to this report, in regard to Nashville.

Small-pox has been on the decline during the quarter.

Dr. H. F. Gould, who has had charge at Johnsonville during the winter, discharged his last case early in April. He has sent in an excellent report of the cases at that point.

Dr. John I. Taylor, of Jackson, Health Officer of Madison county, reported five cases in his county in April.

A case appeared at Franklin, and was promptly removed to the hospital by Dr. Shy, and there were no other cases.

Dr. H. L. Williford, Shelby County Health Officer, wrote, April 30, that there were some cases in the county outside of the city, which were sent to the hospital. He has forwarded a special report in regard to the cases.

The Nashville and Davidson County Health Officers have made special reports, which are appended.

In accordance with the instructions of the Board, a correspondence has been carried on with the Chattanooga Board. Since that time the Board has been reorganized, with Dr. Gibbs, President; Dr. Curtis, Vice President, Dr. Baxter, Secretary, and it is hoped and believed that that city will no longer neglect the important work of systematic sanitation.

The Nashville Board has also been reorganized on a new basis, the old Board retiring, and it now consists of the Mayor, the Chairman of the Board of Public Works, and the Health Officer, Dr. C. Mitchell, who is also President.

The alarming cholera news is a note of warning that we should not fail to heed. With a National Board of Health deprived of power and money to do any efficient work, with the quarantine service in the control of a department which has not the confidence of the country and which cannot win respect or support, with few of the States with efficient Boards, and the cities in the hands of local politicians, who do not understand the meaning of the word sanita-

tion, it is indeed a sad outlook for fighting a pestilence if it should reach our shores.

Here in Tennessee, gentlemen, our State Board, with but little power and no funds, and only a few Local Boards that deserve the name, it is almost certain that a single cholera germ being introduced it would spread death all over the State.

You, gentlemen, have raised the note of warning again and again. You have cried aloud, but your voice has not been heeded, and now, with the danger staring us in the face, we are almost powerless, owing to ill-advised and niggardly legislation.

Instead of systematic sanitation in our towns you will see the mud scraped out of a few gutters and lime sent around by the Mayor, and most of it used for whitewashing fences. That is about as far as most of the small towns have gone in the prevention of disease.

Gentlemen, you have a stupendous undertaking ahead of you, and I do not envy you the task.

This being the last report I shall have the honor of making to your honorable body, allow me to again thank you for numberless courtesies and for your confidence, and to wish for the Board an honorable and useful career in the self-sacrificing work of protecting the people against disease and death.

C. C. FITE, *Secretary.*

DR. WILLIFORD'S REPORT.

To the President and Members of the State Board of Health:

GENTLEMEN: I herewith submit my second quarterly report as Health Officer of Shelby county, the quarter commencing April 1, and ending June 30, 1884. The health of the county during the period this report embodies, has been, as a general thing, good.

Dysentery prevailed to some extent in several country localities; also in the city during the latter portion of May and the first of June, the cause being, in my opinion, the very wet and unseasonable weather we had at that time.

SMALL-POX.

On April 4 Charles Marshall, from St. Louis, was admitted into the Marine Hospital; the next day his disease was found to be confluent small-pox, and he was at once removed to the county pest-house, where he died a few days afterward. On April 8, Charles Russell was admitted into the Marine Hospital, suffering with small-pox, and he was at once sent to the pest-house, and the bedding and clothing used for him put out on the hospital ground to sun and air, from whence they were stolen a few hours afterwards. On May

20, Charles Ewell, who lived in a small shanty a few hundred yards east of the Marine Hospital, developed the disease. The next day Dillie Hendricks, ten years of age, living in the same shanty, took the disease. The house and contents were thoroughly fumigated, and all persons who had been exposed vaccinated. There were four other cases in the family, viz. Mrs. Hendricks, Bohanna Stevens, Tersey Stevens, and Godin Hendricks. All of these were mild, and recovered. It is my opinion that all of these six cases had their origin in the bedding stolen from the Marine Hospital.

The expenditures for medicines, disinfectants, etc., for the jail for this quarter were \$38.45. The health of the prisoners confined in the jail has been good. The county convicts have suffered considerably from dysentery and diarrhea, due, I think, to the bad water they are often compelled to use while at work on the county roads.

I find the main building at the pest-house very much out of repair. It should at once be painted to prevent further decay.

All of which is very respectfully submitted.

H. L. WILLIFORD,
County Health Officer.

DR. MITCHELL'S REPORT.

The following is the report of the Health Officer of Nashville:

OFFICE OF THE BOARD OF HEALTH,
NASHVILLE, TENN., June 28, 1884.

C. C. FITE, *M. D., Secretary State Board of Health.*

DEAR SIR:—In reply to your inquiry of the 20th inst., I would say that on May 26, 1884 the City Council of Nashville, upon the recommendation of the City Board of Health, repealed the ordinance by which it was created, and at the same time provided its successor in the shape of a new Board, to be composed of the Mayor, the Chairman of the Board of Public Works and Affairs, and a Health Officer to be elected by the City Council biennially. At an adjourned meeting of the Council held on the 29th of May, the undersigned was elected Health Officer, and on the day following the officers designated in the ordinance met and organized by electing the undersigned President and making the Health Officer the executive officer of the Board, etc. Everything is being done to put the city in as good hygienic condition as our limited means and resources will admit of. No particular disease is prevailing to any unusual extent. In truth, we are having fewer deaths than usual at this season of the year from diarrheal diseases, and only one death from cholera morbus thus far.

In reply to your inquiry in regard to measles during the winter and spring, I would say that there were not any deaths from this cause until January, 1884, in which month there were two, February four, March two, April and May one each, June, so far, none. Since January 1, fifty-three cases have been reported to this office, but I do not suppose that represents more than one-fourth of the cases that actually occurred. The disease was generally of a mild type, and the majority of the cases were treated with domestic remedies, and were never placed under the care of a physician.

From April 1 to date, there have been recorded at this office sixty-eight cases of small-pox and varioloid; of these twenty were white and forty-eight colored, thirty-three remained at home and thirty-five were sent to the small-pox hospital; of those remaining at home eight died, twenty-three recovered and two are still in bed. During the same period last year, 132 cases were registered.

The white population are pretty thoroughly protected by vaccination, but the same cannot be said of the colored, especially those who have come here or have been born within the last eighteen months.

Very respectfully,

CHAS. MITCHELL, M. D.,
Health Officer.

DR. COOK'S REPORT.

The following is the report of the Davidson County Health Officer:
NASHVILLE, TENN., June 30, 1884.

To the Tennessee State Board of Health:

GENTLEMEN:—I have the honor to state that, since my last report to you, April 1. 1884, there have occurred in Davidson county, beyond the corporate limits of Nashville, only forty cases of small-pox, distributed in civil districts as follows:

In the Eighteenth District.....	1
Seventeenth District.....	1
Fifth District.....	1
Thirteenth District.....	37
Total... ..	40
There were discharged at home.....	10
Died at home.....	11
Sent to River View Hospital.....	18
On hand in Thirteenth District.....	1
Total.....	40

RIVER VIEW HOSPITAL.

On hand, April 1, 1884.....	48
Admitted since.....	108

Discharged.....	118
Died.....	24
On hand.....	14
White.....	28
Colored.....	80

It is gratifying to state that, acting under instructions from your Executive Committee of March 11, 1884, and of the Honorable County Court of Davidson, at its April term, by vaccination, by flagging premises where small-pox existed, and by the distribution of circulars containing extracts of the law, and the penalty thereof for violating the rules and regulations of the State Board of Health, which the people have respected, disease seems to have steadily declined, till now we have but one case remaining in the county.

Furthermore, in accord with the same instructions, I have discontinued burning and destruction of either wearing apparel or bedding altogether, and have substituted thorough boiling in solution of sulphate of zinc for three hours, thorough washing in concentrated lye, drying in the open air and sunshine, and last, but not least, effectual fumigation in sulphur smoke, in a closed room, during the night before patients are discharged in the morning. By this method, I have been enabled to save for the county a very large amount of money, as heretofore a great deal of property was destroyed as a protection against the contagion. I am sure this method is judicious, safe and economic, and should be commended.

Respectfully submitted,

W. C. COOK, M.D.,

Davidson County Health Officer.

THE WASHINGTON CONFERENCE.

The following report was made by the Secretary on the State Boards of Health Conference held at Washington, D. C., May 6 and 7, 1884:

To the Tennessee State Board of Health.

GENTLEMEN—Your President and Secretary, acting under instructions given at the April meeting of the Board, had the honor of representing you during the meeting of the American Medical Association at the conferences of the State Boards of Health.

The sessions of the section on State Medicine were instructive and interesting, and the discussions brought out points of great value to the sanitarian. May 6, there was an informal conference in regard to the State Board of Health's matter, and after a full discussion the original Committee on Organization was enlarged, and on the following day made their report as follows.

Resolved, That there shall be a conference of executive officers and other representatives of State Boards of Health during the meetings of the American Public Health Association, and at other times if desired. All questions arising in such conference shall be determined by vote by States, each State being entitled to one vote, and the officers shall be a Chairman and Secretary.

Signed :

C. W. CHAMBERLAIN, Connecticut,
J. E. REEVES, West Virginia,
STEPHEN SMITH, New York,
H. B. BAKER, Michigan,
C. C. FITE, Tennessee,
THOS. F. WOOD, North Carolina.

The above resolution is the only constitution of the Conference.

It was decided not to create a new organization, and not to interfere with the Public Health Association. This view was held by your representatives, and firmly maintained during the two days' discussions and in committee.

As seen by the resolution, the purpose is that those who are actually engaged in the practical details of State Boards of Health work may get together once or twice a year and, in an informal way, discuss the various perplexing details they daily encounter, and derive benefit from each other's experience.

The Museum of Hygiene of the Medical Department of the Navy was visited, and its purposes and prospects examined into. It will be a bureau for original investigation into the cause of all disease, and of all approved sanitary appliances; also a library devoted exclusively to works on prevention of disease or sanitation. It is just such an institution as is needed in this country. The practitioner or the temporary office of a Board of Health cannot engage in any such extended investigations, and unless such work is done by some branch of the Government service it will not be done at all.

Respectfully submitted, C. C. FITE, *Secretary*.

Dr. G. B. Thornton read a report on the Quarantine Conference, held at New Orleans, June 2, 3 and 4. This appears in full hereafter.

The portion of the Secretary's report in regard to epidemics was referred to the Committee on Epidemics, and the report was received and filed.

The delegates to the State Medical Society made the following report to the State Board of Health :

To the Tennessee State Board of Health:

GENTLEMEN—Your Committee, appointed to attend the sessions of the State Medical Society at Chattanooga, April 8 and 9, beg leave to report that said duty was performed to the letter.

The meeting was largely attended, and full of interest to the profession and general public. Marked courtesy was shown to your representatives.

The members of the Medical Society of the State of Tennessee fully appreciate the fact that the people look to them as leaders in the great work of preventing disease. Recognizing the lamentable want of legislation upon what is really the foundation of this whole grand feature of modern scientific civilization, the Society unanimously and cordially "Resolved, That the President appoint a committee of five on the State Board of Health, whose special duty it shall be to aid in the passage, by the next General Assembly, of a satisfactory law upon vital statistics."

The following very able committee was appointed by President D. D. Saunders:

W. T. Hope, M.D., Chattanooga; F. L. Sim, M.D., Memphis; Richard Cheatham, M.D., Nashville; J. B. Murfrec, M.D., Murfreesboro; J. B. W. Nowlin, M.D., Nashville, Chairman.

All the members present entered fully into the spirit of Dr. W. K. Bowling's statement in 1877, to-wit: "That the State Board of Health is the legitimate offspring of the State Medical Society, and that its efficiency and value depend upon the support and aid of the profession represented by that Society."

J. BERRIEN LINDSLEY,
P. D. SIMS,

Committee.

The following resolution was offered by Dr. Plunket, and adopted:

Resolved, That the Executive Committee be directed to prepare a circular letter to the Municipal and County Health Officers throughout the State, indicating the special features this Board desires embraced for the purposes of uniformity and comparison, in all monthly and quarterly reports they now, under the law, are required to make to this Board.

The Board then adjourned to 3 P.M.

AFTERNOON SESSION.

NASHVILLE, July 1, 1884.

The members were present as at the morning session.

At a called meeting of the Board here May 29, the following communication was read by the Secretary :

NASHVILLE, TENN., May 29, 1884.

To the Tennessee State Board of Health :

GENTLEMEN—I desire to take this method of presenting my resignation as your Secretary and Executive Officer.

When I was elected in October, 1882, I was not aware of the amount of time and energy the office would require, and its duties are on the increase. For months past I have been trying to make up my mind to take this step, but have only recently fully determined to do so. I have found that the frequent trips I have been forced to take to forward the work of the Board interfered seriously with my practice, and the office hours of the Board being during the most important hours of the day, have a disastrous effect on my more important duties, which of course are my obligations to my patients.

Allow me to say, gentlemen, that I am profoundly thankful for your confidence and continued courtesies, and would desire to continue the pleasant relationship, were it possible to do so ; but I cannot do justice both to myself and you, and it is therefore a duty I owe you, as well as myself, to retire, and request you to elect some one who can devote his entire time to the work.

I hope you will accept this resignation at once, and elect a successor who can take charge at the end of the present quarter, July 1.

I am, very truly, etc., C. C. FITE.

The Board, appreciating fully the motives prompting the Secretary to such a course, upon motion, accepted his resignation, to take effect as stated, July 1.

The next order of business being the filling of the vacancy thus created, Dr. J. M. Safford put in nomination Dr. J. Berrien Lindsley, who was unanimously elected to fill out the unexpired term of Dr. Fite.

Dr. Plunket nominated Dr. Daniel F. Wright, of Clarksville, to fill the vacancy caused by Dr. Lindsley's acceptance of the Secretaryship.

Dr. Wright was unanimously nominated, and his name

transmitted to His Excellency, Gov. W. B. Bate, who at once confirmed the nomination.

Dr. G. B. Thornton nominated Dr. J. D. Plunket for President, and he was unanimously elected.

The cholera explosion occurring in Toulon, France, beginning June 13th, ult., and its tendency to spread throughout Europe, and possibly America, was next taken up, and fully discussed by all the members of the Board.

Col. E. W. Cole moved, and it was adopted, that the subject be referred to the Executive Committee, with the request that they prepare and issue a circular, giving the most approved methods of preventing or dealing with cholera.

NOTE.—The changes above mentioned left the Board and Committees as follows:

MEMBERS.

DR. J. D. PLUNKET, Nashville, *President*.
DR. J. M. SAFFORD, Nashville, *Vice-President*.
DR. G. B. THORNTON, Memphis.
DR. P. D. SIMS, Chattanooga.
HON. E. W. COLE, Nashville.
HON. D. P. HADDEN, Memphis.
DR. DANIEL F. WRIGHT, Clarksville.

DR. J. BERRIEN LINDSLEY, *Secretary and Executive Officer*.

EXECUTIVE COMMITTEE.

DR. J. D. PLUNKET, *Chairman*.
DR. J. M. SAFFORD.
HON. E. W. COLE.

STANDING COMMITTEES.

Vital Statistics—J. D. Plunket, G. B. Thornton, P. D. Sims.

On Prisons—P. D. Sims, E. W. Cole, D. P. Hadden.

Geological and Topographical Features of Tennessee in Reference to Sanitary Relations—J. M. Safford, P. D. Sims, D. F. Wright.

Epidemic, Endemic and Contagious Diseases—G. B. Thornton, J. D. Plunket, P. D. Sims.

Library—J. D. Plunket.

SPECIAL COMMITTEES.

Water Supply of Tennessee—J. M. Safford, G. B. Thornton, P. D. Sims.

School Hygiene—D. F. Wright, P. D. Sims, G. B. Thornton.

Abattoirs—G. B. Thornton, J. D. Plunket, P. D. Sims.

Railroad Hygiene—E. W. Cole, D. P. Hadden, P. D. Sims.

Transmission of Tuberculosis from Milk and Meat of Infected Animals—J. D. Plunket, G. B. Thornton, P. D. Sims.

Inland Quarantine—D. P. Hadden, D. F. Wright, P. D. Sims.

TENNESSEE HEALTH RESORTS.

Our State has long been noted for its mineral springs and mountain air. Because of the latter especially, Switzerland places all Europe under contribution, and the White Mountains bring untold millions into New Hampshire. In the *Nashville American* of September 7, 1884, an article appeared, which, bearing upon one of the topics assigned to Prof. Safford, was calculated to aid his researches. I therefore sent a copy of the paper to the proprietors of over fifty springs and mountain resorts. "Killebrew's Resources," always an indispensable hand-book, helped me

to the list. Such articles in our newspapers are of great assistance in the work of the Board, and will always be made effectual, if brought to my notice. The following is the editorial alluded to :

SUMMER HEALTH RESORTS.

The disposition among town people to run off for a time grows more marked as the approach of each successive summer rolls round, and many are the reasons that prompt this going. Some do so for fashion's appearance, some for the sake of domestic peace, some to escape the heat, some in search of health. Many who go for simple recreation really need a change of scene for the repair of worn brain in these days of strain of enterprise in business.

The want of reliable information, even by those who have the time and means to go away, is felt more or less sensibly by all. Three places usually command attention—the farm house, the sea-shore, the mountains. The first insures quiet, with ordinary home comforts, but the farm is better adapted to the farmer than to townsfolk. The sea shore draws immense crowds, but to the vast majority its advantages are overbalanced by its discomforts and its defects. Sea air and mosquitoes are not to be divorced from each other by mortal power. No plan of avoiding damp beds, or procuring dry cigars by smokers, has been successfully developed as yet. Drainage is notoriously defective at every seaside resort, and in pulmonary complaints the sea air is not adapted to the necessities of such cases although hotel-keepers and those pecuniarily interested are disposed to argue to the contrary. The mountains offer, on the whole, adjuncts not obtainable elsewhere. In selecting a mountain resort, it is essential that the merits of its air, water and hygiene be carefully inspected. A defect in any one of these is condemnatory of its claims, no matter how creditable its remaining features may be. Now, the Cumberland Mountain Plateau peculiarly abounds in resorts which possess to the full every essential that nature is asked to supply. We name one, by way of illustration—Sewanee—which, as a type of health resorts fulfills all requirements of the tourist, the invalid and the seeker of rest and cool, enjoyable surroundings. Situated on top of the Cumberland Mountains and reached by that marvel of skill, enterprise and ingenuity in overcoming almost insurmountable obstacles—the Tennessee Coal and Iron Railway—at an altitude of more than twenty-three hundred feet, and overlooking a series of entrancing valleys and distant peaks of towering ranges, it possesses an atmosphere which, for purity, cannot be excelled, a most happy medium,

neither too dry nor too moist, and not too hot nor too cold, stimulating from the ozone it characteristically possesses, yet free from exciting qualities, it is typically fitted for the invalid of most varied type. Our State Board of Health, appreciating the great importance and value of this subject, are at this time, we are glad to say, preparing an exhaustive report upon "The Health Resorts of Tennessee," and when the further fact is stated that Prof. J. M. Safford is chairman of the committee having the matter in hand, the public will feel assured of its reliability and impartiality when it is done.

QUARTERLY SESSION, OCTOBER, 1884.

NASHVILLE, October 7, 1884.

The Tennessee State Board of Health met Tuesday, October 7th, at 11 A. M., in the office of the Board, at the State Capitol. There were present, Dr. James D. Plunket, President; Professor James M. Safford, M. D., Vice-President; Dr. Daniel F. Wright, of Clarksville; Dr. G. B. Thornton, of Memphis.

The minutes of the July meeting were read and approved.

The Secretary read his report for the quarter ending October 1st, and also special reports from the Health Officers of Davidson county, Madison county, Shelby county, and from the Secretaries of the Memphis Board of Health, and from the Secretary of the Grand Junction Board of Health.

On motion of Dr. Safford, the portions of the Secretary's report in regard to epidemics, was referred to the Committee on Epidemics, and the report was received and filed.

SECRETARY'S REPORT.

To J. D. PLUNKET, M. D., *President State Board of Health*:

SIR—The past quarter has been one of unusual activity in the office and educational work of the Board. This work has occupied all my time and energy, with, perhaps, the exception of three or four days at intervals. When your Board met on July 1st, the alarm of an impending invasion of cholera had barely reached this

vicinity. Since that time the pestilence has developed in a virulent and tenacious form in southern France. It has visited Italy, almost from end to end of its boot-like shape, spreading a terror and dismay even worse in results than the direct loss of life it has occasioned, heavy as is the latter. Upon Spain it is slowly but steadily fastening its fangs. All Europe is alarmed, and engaged in precautionary measures. The damage to the trade, commerce, and travel of the countries visited, or closely threatened, is estimated by millions; the loss of life by thousands.

Therefore, it is quite evident that your Board acted prudently in directing the Executive Committee to take prompt steps toward arousing the people of Tennessee to the necessity of early and thorough preparation for the visit of its old and well known enemy, epidemic Asiatic cholera.

The Executive Committee has held daily sessions of from one to two hours, and my course has been very much guided by the timely and valuable co operation of said committee.

During the quarter I have written two hundred and forty (240) letters. Of the quarterly proceedings, one thousand copies were printed. Of these, eight hundred and sixty one (861) were mailed to exchanges, and to a carefully selected list of prominent physicians and sanitarians throughout America. Many responses were received, specially commenting upon Dr. Thornton's report on the New Orleans Quarantine Conference. This report was also copied in full by three at least, and perhaps more, leading medical journals, thus giving it a very wide additional circulation.

"The Cholera and How to Prevent It," is the title of a circular, a copy of which is hereto appended. Of this, five thousand copies were printed, and a few over three thousand have been mailed to the editors, physicians and clergy of Tennessee. Five thousand copies of a "Memorandum, addressed to the Local Authorities of the Cities, Towns and Villages of Tennessee," were also strack off, a copy of which accompanies this report. Likewise five thousand copies of the Laws establishing this Board, with a Letter to Magistrates and Mayors, a copy of which is also appended. As the circular upon small pox was out of print, the Executive Committee ordered a new and revised edition of five thousand. Of each of these three pamphlets, three thousand five hundred and sixty-one copies have already been systematically distributed among the magistracy of Tennessee. Every civil district in the State has thus received a note of warning against an impending evil, as also directions against the insidious ravages of a loathsome disease which has recently cost some of our county courts very large expenditures.

As much alarm exists in several Northwestern States regarding

diphtheria, and as several localities in Tennessee have been more or less threatened, a circular has been printed on "Diphtheria; its Restriction and Prevention." Several hundred copies have been issued to parties making application. See copy appended hereunto.

I have also mailed to each county and city Superintendent of Public Instruction copies of a circular letter, drawn up conjointly by Daniel F. Wright, M. D., Chairman of your Committee on School Hygiene, and by Hon. Thomas H. Paine, State Superintendent of Public Instruction. Enclosed in each of said letters were mailed three copies of a carefully prepared form for returns connected with school hygiene. The officers to whom these documents have been addressed are manifesting much interest in this topic, of such vital moment to the future of Tennessee. Already, valuable and careful answers have been received. If all do as well as some have already done, a mass of material will be accumulated of permanent value for use in this department as in that of Public Education. See appended copies.

On August 8, the Executive Committee having received authentic information as to the prevalence of small-pox in Jackson, and of consequent alarm and uneasiness at Milan and other points, I was at once ordered to visit and inspect those towns, and to give what advice and assistance lay in the province of this Board. The result of this inspection was given in a full report made August 12, to the Executive Committee, which papers, with recent statements from Dr. John I. Taylor, Health Officer of Madison County, and from Dr. T. E. Prewett, Secretary of the Board of Health of Grand Junction, I beg leave to make part of this report.

In connection with this part of my work, must be noted the hearty and liberal co-operation of those controlling the great lines of railroad which permeate and render accessible so many counties in the State. Also, specially is to be observed the action of one of the wealthiest as well as oldest of these corporations, to-wit: The Illinois Central Railroad Company. When in West Tennessee and at Cairo, I noticed in the various depots and stations an order addressed to all employes of said road. On writing to President J. C. Clark for information as to the origin of said order, the following was received from General Superintendent, E. T. Jeffery:

"Your letter of the 10th inst., to our President, has been referred to me. As soon as it became apparent that small-pox would be epidemic along portions of our line in Kentucky and Tennessee, I gave orders for the vaccination of our employes, and their families, making it compulsory on employes, and offering facilities for the free vaccination, by our company's surgeons, of employes' families.

"The matter was placed in the hands of Dr. J. E. Owens, our

Superintending Surgeon and Capt. J. G. Mann, Division Superintendent, who arranged the details necessary in the execution of my orders. And I have sent your letter to Dr. Owens, with the request that he write you, giving in full the information you desire.

Yours truly, E. T. JEFFERY."

It is obvious that were all railroad corporations in the Union to observe this policy great benefit would result to the public at large.

Dr. Owens' letter is appended as part of this report.

I take pleasure in presenting to the Board a carefully prepared report by W. C. Cook, M. D., Health Officer of Davidson County. Three topics are specially noticed, namely, the prevalence of small-pox, now stamped out, from March, 1882, to June 17, 1884; the new Davidson County Jail, a result of the timely and energetic action of the State Board, and the precaution taken against the origin and spread of diphtheria, as now threatened.

All of which is respectfully submitted by

J. BERRIEN LINDSLEY, M. D.,
Secretary and Executive Officer.

REPORT ON SMALL POX AT JACKSON.

To DR. J. D. PLUNKET, *Chairman of the Executive Committee of the Tennessee State Board of Health:*

SIR—In compliance with instructions from your committee, I beg leave to report that, on Saturday, August 9th, and Monday, August 11th, I made a thorough inspection of the city of Jackson, having special reference to the outbreak of small pox, which has just caused much uneasiness in West Tennessee. The origin and progress of this explosion is lucidly given in the following notes, furnished by Dr. John I. Taylor, Health Officer of Madison county:

"In compliance with your request, I send you below a report of the small pox outbreak existing in our city. The first case made its appearance in the person of a negro child on the 24th of June last. It was contracted from its father who brought the disease from East Cairo Ky. where he had visited a fisherman's boat (infected with the disease) for the purpose of buying a fish. The case was diagnosed chicken-pox by the attending physician and before the mistake was discovered, three negroes living at different points in the city contracted the disease by visiting the child. Later the mother and grandmother of the child contracted the disease, and the latter died.

In another case a negro girl living five miles in the country paid a visit to the family, and in fourteen days after her return home was taken down with small-pox. Of these cases (seven in number)

two died, two recovered and have been discharged after the proper precautions had been taken, and the remaining three have been removed to the small-pox hospital, two miles from our city, where they are closely guarded and every attention necessary to their comfort given them.

Among the whites, the first case made its appearance on the first day of July in the person of a little girl. This child's father died in East Cairo, Ky., of what his physicians stated to be meningitis, but after developments have created the belief that he died of supposed small-pox. The child with her mother came immediately to Jackson after her father's death, and went to live in a family consisting of fifteen persons. In two weeks after her arrival here she was taken sick with small-pox. This case ran its course also without its nature being recognized by the physician in attendance, but as soon as the mistake was discovered the house and its inmates were placed under close guard, and all persons who had been exposed were vaccinated and watched until the period of incubation had passed. Since there have been nine cases in this family; two have died, four are convalescent, and three are in the second stage of the disease at this writing. The remaining point at which the disease exists in our city is in the family of a railroad employe, who says he contracted the disease in East Cairo, where his duties carried him every day or two. His wife contracted the disease from him, and both are now convalescing. The other members of the family had small-pox several years ago, with the exception of one young man who is living with them. This place is also guarded and will continue to be watched until all danger is passed.

To sum up, we have had up to date eighteen cases; four have died, seven are convalescing, or have been discharged, and seven are now under treatment. Every precaution has been taken to protect our citizens against the disease and to prevent its spread into our neighboring towns. The houses from which cases have been discharged or removed have been scoured, fumigated and whitewashed, and will be ventilated before any one is allowed to move into them."

From the above statement, and from what I saw and learned when in Jackson, it is safe to say that there is no likelihood of the disease spreading in Jackson, and still less of its being communicated to any other locality. The county authorities are wide awake, and have provided amply for the comfort and medication of the sick, and for the complete isolation of all who have been in danger of infection; so that their neighbors and the people at large are effectually protected.

As directed, the general sanitary condition of Jackson was examined:

Its site is very fine, on a plateau commanding extensive views, and with excellent natural drainage. The wealthier people dwell in large, handsome houses, with ample and beautiful grounds. There are low grounds in the suburbs with small, half-dry sloughs, or runs, much troubled by malaria and its results, but the houses of the colored people here are on better sites, are roomy, and with a comfortable look.

The principal defect of Jackson is danger of contamination of the drinking water, which is furnished by wells and cisterns. Owing to the porous nature of the soil it is exceedingly difficult to keep these wells and cisterns from being polluted by filth on the surface or in pits. Another defect is want of proper closet accommodation in the business hours of the day, and consequent pollution of the atmosphere breathed by the occupants of the houses.

One great improvement will remedy both these defects, to-wit A good supply of water. Fortunately for the brilliant future which is now opening upon Jackson, this improvement is a certainty. The contract for a water works has just been closed at a cost of \$80,000. The work will be commenced on October 1, next, and be finished on January 1, 1885.

Complementing this great forward step by its necessary accompaniment, a good system of drainage, Jackson will possess all the elements, natural and artificial, of a most beautiful city.

As directed, I sought a conference with the people of Jackson on health matters and on Monday evening had the pleasure of spending an hour and a half with some fifty or sixty gentlemen. The work of the State Board of Health, and the imperative necessity of such an organization in each county as would bring the benefits of the work within the reach of every inhabitant in the State, were the topics discussed. As one result of the evening's interview, there will doubtless be held at Jackson, in May, 1885, a sanitary convention for West Tennessee.

Lastly as directed I went to Milan to ascertain the facts connected with quarantine there established. The Mayor S. H. Hale, courteously furnished all desired information. As seeing the *modus operandi* in such cases, I give the town ordinance in full.

Extract from the minutes of the Board of Mayor and Aldermen

"MILAN, TENN., August 5, 1884.

"Board met pursuant to a call of Mayor Hale. * * * The Mayor stated that the purpose of the meeting was to consult in regard to the advisability of quarantining against Jackson, Tennessee. After consultation and free discussion with Drs. Jordan and

Henderson, the following ordinance was passed by the unanimous vote of the Board: * * * * *

“Whereas, It has been reliably reported to the Board of Mayor and Aldermen of the town of Milan, Tennessee, that small-pox prevails in the towns of Jackson, Tennessee, and East Cairo, Kentucky, to an alarming and dangerous extent;

“Therefore be it enacted by the Board of Mayor and Aldermen of Milan, Tennessee, That a strict quarantine be and is hereby established between the said towns of Jackson, Tennessee, and East Cairo, Kentucky, and that persons, or baggage, or other things shall not get off, or be put off at said town of Milan, Tennessee, as hereinafter provided.

“Be it further enacted, That any person, baggage or thing coming from said towns will not be permitted to stop in said town of Milan, unless the person or thing proposed to stop here, or be put off here, shall produce a certificate from the properly authorized officers of the State Board of Health at said towns of Jackson, Tennessee, and East Cairo, Kentucky, that the persons or things have not been exposed to the infected districts of small-pox in said towns; and it is hereby made the duty of the town constable of said town of Milan, Tennessee, to inspect and investigate all persons, baggage and other things from said towns of Jackson and East Cairo, and see that they have a proper certificate stating that the same has not been exposed to the infected regions about said towns.

“Be it further enacted, That any person stopping here from said towns of Jackson and East Cairo, or elsewhere, causing any baggage or other thing to be stopped here, without a proper certificate, shall be fined not less than five, nor more than fifty dollars, for each offense.

“Be it further enacted, That any railroad or other corporation, or other person, who shall bring any person, or baggage, or other things from said towns of Jackson and East Cairo to said town of Milan, which has been exposed to the infected districts of said towns of Jackson and East Cairo, shall be subject to above fines.

“Be it further enacted, That any persons who come here from any infected town or other place, who fail to pay their fines, will be put in an isolated place and strictly guarded until all danger is over.

“Be it further enacted, That this ordinance take effect from and after its passage.”

To appreciate the above action, we must remember that, in January, February and March, 1882, Milan was troubled by imported small-pox very severely. Some fourteen cases and eleven deaths occurred. The business of the town was suspended for a long period. The neighboring towns quarantined against Milan. The

cost of stamping out the pestilence, which was effectually accomplished under the direction of the State Board of Health, was over \$2,000. No one need be surprised that, after such an experience, this growing and prosperous town is sensitive. Being now assured that the Madison county authorities are extending the needed assistance to Jackson, and that the usual sanitary precautions are in full force there, the quarantine has this day been raised.

All of which is respectfully submitted.

J. BERRIEN LINDSLEY,

August 12, 1884.

Secretary.

DR. J. I. TAYLOR'S REPORT.

JACKSON, TENN., September 29, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary, Nashville, Tenn.:*

DEAR SIR—Since sending my last report we have had forty-three additional cases of small pox—seven whites and thirty-six blacks, thirteen have died, twenty-two have recovered or are convalescing, and eight are now under treatment, five at the small-pox hospital, and three at their homes in the city. These last cases were contracted at the different infected points in our city. This is a bad showing for the authorities, who have had the "outbreaks" in hand, and has been due to a relaxation of the vigilance with which the cases were managed in the beginning. Within the past week, however, they have instituted a more rigid system of isolation and quarantine, and hope to put an end to the trouble before cold weather sets in.

These last cases make a total of sixty-one up to date, from June 24, with seventeen deaths.

Respectfully,

JNO. I. TAYLOR,
Health Officer Madison County.

DR. T. E. PREWETT'S REPORT

GRAND JUNCTION, TENN., September 30, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary, Nashville, Tenn.:*

DEAR DOCTOR—In accordance with your request, I now proceed to give a short history of small pox at this place. There were nine cases in all (confined to one family). James Scanlin (Irish), embracing his entire family of children, ranging from 14 months to 14 years of age.

The first case made its appearance in the person of his oldest daughter, who had been attending a Catholic school at Jackson, Tenn., August 5, 1884. She came home August 12, and broke out August 15, when I was called in and pronounced the case small-

pox, and had the house isolated and five of the children moved to a tent; the other three (small) had pertussis, and the parents objected to moving them.

Notwithstanding they were all vaccinated as soon as we could procure the quills, it developed in those in the tent in fourteen days, when they were moved back to the dwelling and an out-house. The three younger children were the last to take it, and had the disease in a milder form than the others.

Two of the cases continued delirious, even after the eruption made its appearance, for several days.

They are all well now, and Mr. James Scanlin has reported for duty to-day as a railroad man.

We are now informed that the little girl was boarding in a house in Jackson, where there were several cases.

Respectfully,

T. E. PREWETT, M.D.,
Secretary Grand Junction Board of Health.

DR. OWENS' REPORT.

CHICAGO, September 16, 1884.

J. BERRIEN LINDSLEY, M.D., *Secretary Tennessee State Board of Health, Nashville:*

DEAR SIR—In reply to your inquiry of the condition of the small-pox contagion on the line of the road, I beg to state, for your information, that the disease had been lingering several months, appearing in greater or lesser violence in Kentucky, from Fulton to Wickliffe, in that State. In April it broke out in force at Wickliffe, Ky., causing many persons to leave that section, and in July it made its appearance at East Cairo, Ky. During every month of the present year there has been small-pox among the residents of the stations on this road, or among the men in our construction trains in Western Kentucky, a few of whom were treated and cared for in the safest manner that could be arranged for them.

Early in July the authorities of the city of Cairo, Illinois, complained that employes of this road falling sick with small-pox in Kentucky, were coming into Illinois and occupying Cairo city pest-house.

About half of the residents of East Cairo, Ky., are employes of this road, the balance were very poor, and to protect the city of Cairo, an order was issued, forbidding our East Cairo, Ky., employes from permitting their sick to go into Illinois.

To protect employes whose duties, as train men, required them to go to East Cairo, they were ordered to be vaccinated or quit the

Company's service. And to protect the city of Jackson, Tenn., where most of our employes reside, who, as train men, went to East Cairo, all employes of the road were required to be vaccinated, or give evidence of recent effective vaccination.

Perhaps it was unnecessary to extend the same precautions as far south as Water Valley, Miss., but it was done that the disease might be eradicated from the line of the road.

Every man, woman and child living in the Company's section houses, station buildings, etc., were vaccinated, from East Cairo to Jackson, Tenn. Our local surgeons vaccinated. A surgeon was sent over the line to vaccinate every employe, and a *resident surgeon* paid to attend the infected district of Wickliffe, Fort Jefferson and East Cairo, all in Kentucky.

A liberal supply of vaccine virus (bovine) was sent from here, as fast as called for by our district and local surgeons, until all were vaccinated. It required arbitrary directions and very quick execution. The employes were made acquainted with the nature of the disease by a liberal distribution of the enclosed pamphlet.

At East Cairo we demanded the attention of the local (county) authorities, and had suitable, vacant cheap buildings erected, where the patients could be separately treated.

Every possible precaution was taken, in order that persons falling sick with other affections should not be sent to a place where they would be exposed.

No new cases have been reported during the past three weeks, and at this time there are no prospects, and scarcely a possibility, of any more cases coming under our control among our employes.

We cannot reach the general public except by example and precept.

Every conceivable measure has been adopted by the gentlemen who carried out our designs; they used the reasonable mode of treatment as far as in their power for the benefit of the sick, and for all others vaccination, and instructions to avoid exposure by all means.

Ignorance is a friend of small-pox. The pamphlets have rendered us wonderful assistance.

I cannot give you the cost at this time, but it will be over \$1,000.

It had become desirable that the inconvenience to our business should be removed. The class of men most exposed to the disease were those who were the most ignorant, and most likely to spread it. 1. Hence the arbitrary rule in regard to vaccination. 2. The care of those suffering from the disease necessitated separation from all others at some remote building. 3. Instructions to all as to avoiding contact with persons who have been exposed.

There was no real cause for such extreme measures of precaution in the State of Tennessee, but an awakening of our employes to their danger caused the public to realize the necessity of vaccination. It seemed that the local authorities in Southeast Kentucky were taking no action to prevent the spread of the disease in the infected district, which was more particularly located along the line of the Illinois Central and the Mobile and Ohio Railroad, and as we expect to transport an immense number of passengers over the road during the coming season, the General Superintendent decided to make an effort to stamp out the disease before it became beyond control.

The whole thing was carried out, as I believe, to a successful end, by Capt. J. G. Mann, Division Superintendent, Jackson, Tennessee, in a manner that is creditable to him and his division, and is worthy of imitation by other roads similarly afflicted.

Respectfully,

JNO. E. OWENS,
Superintending Surgeon I. C. R. R.

DR. COOK'S REPORT.

To the Tennessee State Board of Health :

I report the following concerning small-pox in Davidson county, which existed continuously from March, 1882, to June 17, 1884. During the months of March, April and May, 1882, R. W. Grizzard, M. D., of Goodlettsville, treated ten cases at Edgefield Junction. In March and April, 1883, he treated also five cases near Goodlettsville, railroad employes, all colored. Five were varioloid. Three of the whole number died. In May, 1883, two cases of varioloid, white, occurred, one at Madison Station and the other at Eldorado Springs. These places are within a circle of 10 or 15 miles on the Louisville and Nashville Railroad, ten miles from Nashville. The disease was imported there from Memphis.

River View Hospital—Was built and occupied about February, 1883, as a place for the reception of small-pox patients, from the county and city of Nashville. The building used prior to this being inadequate, all persons afflicted with the disease were placed in the new institution, of which I took charge on April 7, 1883, relieving my predecessor, Dr. Charles Mitchell. Preceding him in charge of the small-pox hospital, was Dr. J. Bunyan Stephens. During the combined terms of these officers—*i. e.*, from May 14, 1882, to July 12, 1884, there were admitted into the two buildings nine hundred and sixty-four (964) persons—distributed through the year as follows :

1882.

May.....	18
June.....	14
July.....	1
August.....	30
September.....	14
October.....	19
November.....	30
December.....	41

1883.

January.....	52
February.....	42
March.....	61
April.....	73
May.....	56
June.....	38
July.....	3
August.....	00
September.....	00
October.....	63
November.....	41
December.....	74

1884.

January.....	68
February.....	64
March.....	76
April.....	37
May.....	49
June.....	22
July.....	5

August 5th, dismissed last patients and closed hospital. Of these there were.

Adults.....	412
Minors.....	508
Unknown ages.....	44
Males.....	441
Females.....	523
White.....	89
Colored.....	875
Died.....	240
Discharged.....	724
Confluent small-pox.....	290

Discrete.....	219
Varioloid.....	168
Hemorrhagic small-pox.....	20
Suspects.....	267

In Davidson County Proper.—The number of cases occurring in Davidson county, outside city limits, from April 10, 1883, to June 17, 1884, under the observation of present Health Officer, were three hundred and ninety-nine (399), distributed through the years as follows:

1883.

April.....	28
May.....	16
June.....	15
July.....	8
August...	12
September.....	21
October.....	12
November.....	31
December.....	41

1884.

January.....	44
February.....	60
March.....	64
April.....	24
May.....	9
June.....	7

Of these there were :

Males.....	208
Females.....	191
White.....	62
Colored.....	337
Adults.....	120
Minors.....	279
Died at home.....	70
Sent to hospital.....	192
Discharged home.....	137
Small-pox.....	295
Varioloid.....	104

These figures show that the disease had steadily increased from July, 1883, to March, 1884, (excepting the month of October, when the hospital was re-opened).

On the 11th of March, 1884, your Executive Committee directed me to carry out certain instructions for the restriction and prevention of small-pox, which I immediately did, setting forth also, by circular, the penalties for violating such rules and regulations. The people saw, respected and obeyed this authority of law, and in about two months and a half, the disease fell in numbers from sixty four cases in March, to seven in June, when, on the 17th of same, it seized its last victim. This result is an argument, not only showing your wisdom and efficiency as a State Board of Health, but also tends to demonstrate to the people and legislators that, by wise sanitary laws, many diseases that epidemically afflict the people may be either restricted or exterminated.

I agree fully with the distinguished Sanitary Officer of Washington, D. C., Smith Townshend, M.D., as to the management of small-pox, when he says, "An efficient health department should stamp out the disease within, at farthest, four times its incubatory period."

You will doubtless agree that our health department needs perfecting by some wholesome sanitary legislation, to which, it is hoped, the incoming General Assembly of Tennessee will have their attention directed.

The New Davidson County Jail. -Immediately after I was elected Jail Physician in January, 1883, I began calling attention of the public and the authorities, through the papers, my reports, etc., to the necessity of building a new jail, more in accord with modern sanitary science. After some months of study and investigation by the Jail Committee and the County Court of Davidson, it was decided to build a jail, of which the following description, clipped from the daily *American*, of this city, of June 30, 1884, will serve to give somewhat a correct idea, to-wit:

"The new jail building will now be completed in about sixty days and turned over to the Jail Committee. An *American* reporter, in company with Mr. Will L. Landrum, who, with Messrs. P. J. Pauly & Bro. of St. Louis, was awarded the contract, yesterday afternoon visited the jail, thoroughly examined the mode of the construction and arrangement of the portion already completed, and received such information concerning that yet unfinished as to enable him to furnish the following description:

"The building is located just north of the old jail on Front street. The building will front 45 feet 6 inches on Front street, and will run backward 80 feet 6 inches. The front of the house will present a very attractive appearance. It will be made with pressed brick, the pilasters and arches laid on black mortar, and the spaces between in white mortar, forming a contrast. Cut stone trimmings

and a galvanized iron cornice will add to the beauty of the building. A white stone tablet will be inserted just above the main entrance, upon which, in raised letters, will appear the words, 'County Jail, Erected 1884.' A hip roof, with tin shingles and iron cresting, will constitute the rest of what can be seen from the street.

"The front portion of the building, extending thirty feet back, and connecting with the jail proper by central corridors, will be used for residence and office purposes. The basement below the street will be used for furnace room, coal room and kitchen. On the first floor, on each side of a central corridor, is a suite of two rooms, those on the south side to be used as the offices of the Sheriff and Jailer, and those on the left for the Jail Physician's office and consultation room. These rooms are 12 feet high. The second floor of this portion of the building will likely be used for residence purposes, and will have rooms exactly corresponding with those below, only one foot less in height. The building will present a front 38 feet above the street.

"Passing backward through the central corridor and through an iron grated door, down three steps, the double ironed entrance door into the jail proper is reached.

"Further passage is here most effectually barred by a four pannel iron door, with heavy lock, which must be unfastened before one can enter. The next door, about a foot and a half beyond, is the most important. It is made of iron and steel lattice work, with a sort of basket arrangement, resembling an iron cage, into which the jailer or turnkey can project his head, and see before entering that all within is right. Looking through this basket, twelve cell doors, six to the right of a corridor ten feet wide, and six to the left, are visible. The entrance through the outer door is in itself difficult. The lock is of a peculiar make, and a triumph of ingenuity. When locked from either side, the keyhole of the other side is automatically closed by the bolt, so that no one can follow the jailer either in or out, even if he is provided with a duplicate key. The door to the prisoners' corridor, as the passage into which the cells open is called, is even more safely secured. After unfastening its central lock yet more remains to be done. On either side of the door, which is a double one, is what is called a lever box, which is provided with a combination lock, of the same pattern, and just as difficult to master, as that of a modern safe. Inside these boxes the bolts which fasten the corridor door are fastened by strong padlocks, which must be unlocked before the bolts can be drawn and entrance to the prisoners' corridor obtained. But the chief use of the lever box is not yet explained. The cell doors are locked not only by a central lock, each by a system of heavy bars and levers, op-

erated by a lever from the outside, which is enclosed in the lever box attached to the outer wall of the cells adjoining the entrance door. The shifting lever, by which the locking bars of the cell doors are operated, is locked with a padlock to a heavy staple in the back of the lever box.

"By this arrangement the jailer is saved the necessity of ever coming in contact with prisoners. For instance, after walking all around the cells in a five foot passageway which separates them from the outer wall of the building, and is called the jailer's corridor, and satisfying himself that all is right, the jailer desires to turn the prisoners into their corridor for exercise, or to permit them to reach the basins, which will be placed in the further end, he enters this corridor and unlocks the central locks of the cells from which he wishes to release the prisoners; stepping back into the jailer's corridor, and closing and fastening the door behind him, he moves the lever in the lever box, and the bolts of all the cell doors are drawn so that the inmates of those whose central locks have been unlocked have nothing to do but to push the doors open and walk out. In releasing or incarcerating a new prisoner, the same caution can be observed. The danger of attack, to which jailers were formerly subjected, is in this manner reduced to the minimum. In all there will be twenty-four of these cells, the upper tier of twelve being arranged, reached and operated in exactly the same manner, a stairway leading to the upper corridor used by the jailer. The dimensions of each cell, which will accommodate four persons, are eight feet deep by six and a half wide, by seven feet high.

"As to the material used in the construction of the cells, the shell is made of plate iron, lathed with hardened bars. The side and entrance ends of the corridor are open lattice work made of five ply hardened bars. The entrance door to the corridor, and each cell door, are also open lattice work, and at the rear of each cell there is a section or window of open lattice work, two by seven feet, all of which afford light and a free circulation of air.

"The bars used are five-ply bars, two layers of steel and three of iron, thoroughly welded together. They are as thoroughly saw and file proof as possible. The lattice work, as well as the lathed sides, are fastened together with counter-sunk rivets, and the different sides are fitted at the top and bottom and all edges into double angle irons, and fastened with counter-sunk rivets.

"The sleeping accommodations of the prisoners will consist of hammocks, made of heavy ducking, which are swung in the cells from side to side, fastened at each end with strong buckles into angle iron loops. Such bunks are greatly more convenient than

mattresses, and never harbor vermin. In the daytime they are swung back out of the way or rolled up and laid aside.

"Each cell will be provided with a water closet, above which is a foul air duct running through to the top of the building through the roof. As before stated, one-third of the rear of each cell is of open lattice work, and further ventilation is provided for by double iron grated windows in the outer wall of the building, just opposite and corresponding with this lattice work. There is no reason, with these arrangements, why the air of the new jail should not circulate as freely, and remain as pure, as in any residence in the city.

"Over these two tiers of twelve cells each (really constituting but one story of the building) will extend iron I beams, from side to tier. Between these beams will be placed a covering of corrugated iron arches, which will be filled up with concrete so as to make a smooth floor of the upper story of the jail. This upper story will contain one cell each for female, insane and juvenile prisoners, eight by thirteen feet in size, a hospital for males, thirty-nine feet eleven inches by thirteen feet, a hospital for females, twenty-four feet eleven inches by thirteen feet, and a bath-room. The floor will be larger than the one below, extending to the outer walls, and containing in all fourteen windows, similar to those used for ventilating the cells below. A wide corridor will separate the male and female departments.

"Mr. Landrum says that the original plans made from the drawings agreed upon by himself and Dr. W. C. Cook, the jail physician, at an early consultation, have never been altered at all, and to Dr. Cook's suggestions, growing out of his experience as County Health Officer and jail physician, will be due much of the excellence of the structure, particularly from a sanitary point of view.

"The lower tier of cells has about been completed under the direct supervision of Frank Gubertz, of St. Louis, boss mechanic for P. J. Pauly & Bro. Every part must be placed in exactly the right position, and none but an expert could undertake the work.

"This jail will be as nearly mob proof as any, and as nearly proof against jail-breaking from within. The cell doors, indeed, are so contrived that when once shut, though their hinges be taken off, they are still as immovable as ever. The lattice work is a great improvement upon the iron grating, both in point of strength and the time which must be consumed in cutting, filing or sawing out."

As a member of the Committee, I was directed to visit a number of towns and cities of this and other States, to ascertain all possible information pertaining to jail structure and sanitation. From this and other sources, I am impelled to the conclusion that, in no

line of architecture and house construction is there to be found such necessity for sanitary improvements and general reformation as exists among the jails of our country. The incoming General Assembly of Tennessee should direct a thorough inspection of every jail in the State, by a board composed of competent physicians, architects and builders, with the view to such legislation as may secure for the unfortunate inmates at least humane treatment.

Respectfully,

W. C. COOK, M. D.,

Health Officer of Davidson County.

NASHVILLE, TENN., September 30, 1884.

DR. H. L. WILLIFORD'S REPORT.

MEMPHIS, TENN., September 30, 1884.

To the President and Members of the State Board of Health

GENTLEMEN — I am glad to report that during the quarter just ended, there has not been a single case of small-pox reported to this office this being due, I think, to the very strict quarantine and thorough disinfection where it has occurred. Diphtheria and scarlet fever are the only contagious diseases that have prevailed to any extent during the quarter. The former was of a very malignant type and fortunately prevailed only to a limited extent in the city. Scarlet fever was very mild but made its appearance in several remote country localities. The health of the Work House prisoners and convicts confined in the county jail has been very good, none having died during the present year. Expenditures for medicines for quarter were thirty-one dollars.

I would recommend that some better arrangements be made for the care of the sick and wounded of the jail, and would suggest that a room be arranged for their comfort, which would very much facilitate their recovery.

Respectfully submitted,

H. L. WILLIFORD.

Health Officer of Shelby County.

Dr. Plunket, Chairman of the Committee on Library, read his report. Received and ordered to be spread on the minutes.

Dr. Plunket, Chairman of the Committee on Vital Statistics, stated that the report, with the exception of tables, was ready.

Dr. Safford, Chairman of the Committee on Geological and Topographical Features of Tennessee in reference to

Sanitary Relations, reported that his paper would be ready for the volume.

Dr. Safford, Chairman of the Committee on Water Supply, reported that he was ready with the preliminary portions of an elaborate paper.

Dr. D. F. Wright, Chairman of the Committee on School Hygiene, presented his report ready for publication, excepting the tabulation of returns from County and City Superintendents yet to be received. The Doctor's remarks led to quite a discussion on vaccination and other points connected with school hygiene.

On Dr. Plunket's motion, it was

Resolved, That Dr. Wright, Chairman of the Committee on School Hygiene, be authorized and directed to make a personal inspection of the public school systems of Memphis, Jackson, Nashville, Chattanooga and Knoxville, and all necessary expenses he may incur in the discharge of this duty to be paid by the Board; the results of such inspection to be incorporated in the above report.

Dr. Thornton moved that the publication of the second report of the Tennessee State Board of Health be referred to the Executive Committee, with full power to act.

Adopted.

On motion of Dr. Wright,

Resolved, That this Board appoint two delegates to the American Public Health Association, and also the Conference of State Boards of Health, to be held in St. Louis, October 13, 1884, and that Drs. Plunket and Thornton be said delegates.

Adopted.

Dr. J. D. Plunket stated that for some time he had been endeavoring to get the United States Signal Service to make daily observations of ozone in Tennessee, and that he was glad to report that at last success was about to crown his efforts.

L. N. Jesunofsky, Sergeant Signal Corps, U. S. A., stationed at Nashville, had begun October 1, at his request, taking ozone observations, and would continue from this on

to do so regularly. The other United States Signal stations in the State he felt assured would soon do likewise, and in this connection he submitted the following correspondence, which explains itself:

NASHVILLE, September 29, 1884.

HON. A. J. McWHIRTER, *Commissioner of Agriculture, Statistics and Mines, Nashville:*

DEAR SIR—Having watched, with much interest and pleasure, the practical workings of the State Weather Service, as organized by you throughout Tennessee, I now, in behalf of the Tennessee State Board of Health, request that you take one step further in advance, and add one other column to your present form for reports, in which shall be recorded the tri-daily observations of ozone, as may appear at the different stations in the State.

Ozone, as you know, is nature's great deodorizing and purifying principle that oxidizes the emanations from decomposing animal and vegetable substances, with which the air is unceasingly being contaminated, thus rendering them innocuous, and fitting the atmosphere for the further sustenance of animal life.

An agent, then, of such amazing power, and present in such variable amount in the medium which envelopes us every moment of our lives, cannot, it would seem, be other than most significant of its influence upon public health.

It is in this relation that the information sought is most desired, for, as yet, we have not a sufficient amount of carefully observed fact to serve as a basis for any generalization of the special relations of ozone to disease.

To the end of supplying this great want, by having the facts in regard to ozone in Tennessee gathered up and collected, and thereby serve indirectly us, prove an inspiration to other States and communities to do likewise, this communication finds its apology; for then, by a careful and conscientious comparison of these facts with the regional and seasonal history of disease, we may be enabled to arrive at conclusions which shall be more than unfounded assertion or imaginative hypotheses.

Should you be pleased to co-operate in the manner suggested, this Board will furnish to all observers whom you may designate the means by which the observations can be made, accompanied by such instructions as may be necessary for the easy comprehension of any.

I am, sir very respectfully and truly yours,

J. D. PLUNKET, M.D.,

President Tennessee State Board of Health

NASHVILLE, TENN., October 6, 1884.

J. D. PLUNKET, M.D., *President Tennessee State Board of Health, Nashville:*

DEAR SIR—Your communication of September 29th, asking the co-operation of the Weather Service Department of this Bureau, in getting the observations of ozone throughout the State, has been received.

This Bureau will, at all times, cheerfully and heartily co-operate with the Tennessee State Board of Health in anything pertaining to the welfare of our State and the advancement of the physical or material interests of its citizens.

Your suggestions regarding the mode of taking the observations will be presented to our voluntary observers, and their assistance invoked in the work.

Very respectfully yours,

A. J. McWHIRTER,

Commissioner and Director State Weather Service.

Upon motion, Dr. Plunket's efforts were warmly commended, and he was requested to not desist in his efforts until success was attained.

After the usual examination of accounts, the Board adjourned.

CIRCULARS

REFERRED TO IN FOREGOING REPORT.

THE CHOLERA, AND HOW TO PREVENT IT.

(Issued by the Tennessee State Board of Health.)

To prevent cholera, every one must help. The State Board of Health may issue circulars, and the local authorities may vigorously enforce regulations, but if each householder will not heartily co-operate in removing the causes which breed cholera, and similar diseases, the pestilence, should it come, will be rendered many fold more disastrous than if otherwise. The following instructions have been drawn up with care, and explain what ought to be done.

1. To prevent cholera, it is necessary to remove the unsanitary conditions which give fatal activity to the cholera poison.

2. To keep a good heart and a cool head, and observe strictly the laws of health.

"A Dervish, traveling over the desert, met the Cholera, to whom he said, 'Where are you going?' The Cholera replied, 'I am going to Bagdad, to kill 20,000.' Sometime afterwards the same Dervish met the Cholera returning, and said, 'You vagabond, you killed 20,000.' 'No, no,' said the Cholera, 'I killed 20,000, fear killed the rest.' — *Oriental legend.*

3. Prompt attention to all looseness of the bowels will generally prevent an attack of cholera. "To arrest diarrhea is to prevent cholera." When cholera is about the slightest diarrhea should be instantly checked. A good diarrhea mixture, which every one should keep in the house, should be taken at once, a doctor should be sent for immediately, and all evacuations should be disinfected as if the case were one of cholera.

4. The unsanitary conditions which enable the cholera germ to become actively fatal, are (a) A tainted water supply, (b) foul privies or cess-pools, (c) foul ash heaps, (d) damp, ill-ventilated houses, (e) defective drainage, ill-trapped sinks, and imperfect sanitary appliances, and (f) filth in any form.

5. All springs and wells should be inspected, even if their water is bright and sparkling, for then it may often be most dangerous. All suspected should be filtered and boiled. All tainted wells and springs should be closed, and whenever a cholera case is reported, all drinking water drawn from rivers, springs or wells should be boiled for half an hour. Filtration is good, but it is best to boil afterwards. Cisterns should be cleaned out at short intervals, and so situated as to be not in close proximity to either drains, privies, or cess-pools, particularly so if built under ground.

6. Cess-pools, or foul privies, are nests for breeding pestilence, and centers for poisoning the earth, the air, and the water. It is chiefly by their leakage into wells and underground cisterns, and their overflow into springs, branches and rivers, that they contribute to the propagation of cholera.

7. Damp, dirty, over-crowded houses predispose their inmates to attack. All low-class tenement property, out-houses, cellars, etc., should be thoroughly lime-washed; back yards should be frequently cleansed and disinfected; fresh air and sunshine, if possible, should be let into every room daily. Where there is a smell in any room, which cannot be removed by opening the window, something is wrong, which ought at once to be put right, or mischief may follow.

8. The careful disinfection and prompt subsequent removal of dirt, filth and decayed matter of all sorts, the vigorous use of soap and the scrubbing brush, the constant ventilation of all sleeping and living rooms, and immediate attention to all foul smells, always important, are never more so than when the cholera is hovering around.

9. The ordinary rules of health should be strictly observed in (a) cleanliness; (b) moderation in all things; (c) avoidance of all sources of cold and indigestion. Every one ought to wash from head to foot at least once a week, and the oftener body linen and bed clothes are changed the better. Never eat with unwashed hands, especially when cases of diarrhea or cholera are in the house. In the latter case some disinfectant should be added to the water before washing, and food should never be taken in the room with the patient.

10. To minimize the danger of infection it is well to be moderate in all things, particularly avoiding all excesses in drinking, in eating, or in exercise. Excess in drinking, sometimes resorted to from a mistaken idea of warding off the cholera, has the exactly opposite effect. Spirits are useless as a corrective of impure water. Excess in eating, by disorganizing the digestion, predisposes to diseases of the digestive organs, of which cholera is the worst. Eat well, but

wisely, and avoid all unripe fruit, indigestible or tainted food, and everything that disagrees with you. Excessive exercise is dangerous, by producing exhaustion; so is prolonged bathing. Everything that causes exhaustion is bad. Avoid all sudden chills, especially when perspiring. Flannels should be worn next the skin. A flannel belt around the waist is strongly recommended. Avoid draughts and late hours, and always wear enough clothes to keep the body warm, especially at night.

11 When cholera or diarrhea exists in the neighborhood of dairy farms, avoid milk coming from that district, and if other milk cannot be conveniently obtained, condensed milk is safer than fresh milk from infected districts.

12 If from any source a case of cholera should develop in any locality in Tennessee, danger of its spreading may be minimized by (a) immediate isolation of the patient; (b) complete disinfection and instant removal of all excretions and other matters that come from him, (c) burning or thorough disinfection of all clothes, bedding, etc., soiled by choleraic discharges.

13. Cholera secretions should be regarded as more dangerous than strychnine. The vessels into which they are discharged should always contain carbolic acid or other powerful disinfectant, they should be immediately emptied, and the privy, water-closet, sink or drain down which their contents are thrown, should be flushed at least once a day with carbolic acid and water, chloride of zinc, sulphate of iron, or other equally as effective disinfectants. Do not spare the disinfectants, especially in the case of privies and cess pools.

14. All clothing, carpets, sheets, towels, etc., which have come in contact with a cholera patient, should, if possible, be burned at once. On no account should they be sent to a public laundry or washed in common with the clothing of others. If not burned, before they are sent put them in a tub of boiling water mixed with carbolic acid, and afterwards have them, as well as the furniture, etc., thoroughly disinfected by the free use of the fumes of burning stick sulphur, continued for at least four consecutive hours.

14 Do not be frightened For one who dies of cholera in the worst years, two die every year of typhoid and similar preventable diseases. No one who gets into a panic gives himself a chance. Doctors and nurses who are constantly attending cholera patients do not die in greater proportion than others. Prompt treatment of the disease in its early stages is almost always successful.

PRECAUTIONS AGAINST THE INFECTION OF CHOLERA.

(Issued by the Tennessee State Board of Health.)

As there are outbreaks of cholera at several places in Europe, and it may extend to places which are in frequent and rapid communication with the United States, it is possible that cases of the disease may, before long, be brought into the ports of this country, whence then they may advance to other and perhaps interior places, notwithstanding the vigilance and efforts of local authorities of such seaboard towns to prevent the spread of the disease. As cases of choleraic infection have widely different degrees of severity, it thus becomes possible, that some such cases, slightly affected, may escape the authorities, and penetrate far into the interior before recognition.

2. Former experience of cholera, especially upon the continent and in England, justifies a belief that the presence of imported cases of the disease at various spots in the country, will not be capable of causing much injury to the population, if the place receiving the infection have had the advantage of proper sanitary administration, and in order that all local populations may make their self defense as effective as they can, it will be well for them to have regard to the present state of knowledge concerning the mode in which epidemics of cholera outside of its native abode are produced

3. Cholera in Tennessee shows itself so little contagious, in the sense in which small pox and scarlet fever are commonly called contagious, that, if reasonable care be taken where it is present, there is almost no risk that the disease will spread to persons who nurse or otherwise closely attend upon the sick. But cholera has a certain peculiar infectiveness of its own, which, *where local conditions exist*, can operate with terrible force, and at considerable distances from the sick. It is characteristic of cholera (and as much so of the slight cases where diarrhea is the only symptom, as of the disease in its more dreadful and alarming forms), that *all matters which the patient discharges from his stomach and bowels are infective*. Probably, under ordinary circumstances, the patient has no power of infecting other persons except by means of these discharges, nor any power of infecting even by them except in so far as particles of them are enabled to taint the food, water, or air, which people consume. Thus, when a case of cholera is imported into any place, the disease is not likely to spread, unless in proportion as it finds, locally open to it, certain facilities for spreading by *indirect infection*.

4. In order rightly to appreciate what these facilities must be, the following considerations have to be borne in mind. *First*, that any choleraic discharge cast without previous thorough disinfection into any water-closet, privy, cess-pool, drain or other depository or conduit of filth, infects the excremental matters with which it there mingles, and probably more or less the effluvia which those matters evolve. *secondly*, that the infective power of choleraic discharges attaches to whatever bedding, clothing, towels and like things have been imbued with them, and renders these things, if not thoroughly disinfected, as capable of spreading the disease in places to which they are sent (for washing or other purposes), as, in like circumstances the patient himself would be. *thirdly*, that if, by leakage or soakage from cess-pools, privy vaults, or drains, or through reckless casting out of slops and wash-water, any taint (however small) of the infective material gets access to wells or other sources of drinking water, it imparts to enormous volumes of water the power of propagating the disease. When due regard is had to these possibilities of indirect infection, there will be no difficulty in understanding that even a single case of cholera, perhaps of the slightest degree, and perhaps quite unsuspected in its neighborhood, may, *if local circumstances co-operate*, exert a terribly infective power on considerable masses of population.

5. The dangers which have to be guarded against as favoring the spread of cholera-infection are particularly two. First, and above all, there is the danger of WATER SUPPLIES which are in any (even the slightest) degree tainted by house refuse or other like kinds of filth, as where there is outflow, leakage or filtration from sewers, house drains, privies, cess-pools, foul ditches or the like, into springs, streams, wells, or reservoirs, from which the supply of water is drawn, or into the soil in which the wells are situated, a danger which may exist on a small scale (but perhaps often repeated in the same district) at the pump or dip-well or spring of a private house, or on a large and even vast scale in the source of public water-works. And, secondly, there is the danger of breathing AIR which is foul with effluvia from the same sort of impurity.

6. Information as to the high degree in which those two dangers affect the public health in ordinary times, and as to the special importance which attaches to them at times when any diarrheal infection is likely to be introduced, has now for so many years been before the public, that the improved systems of refuse removal and water supply by which those dangers are permanently obviated for large populations, and also the minor structural improvements by which separate households are secured against them, ought long

ago to have come into universal use. So far, however, as this wiser course has not been adopted in any city, town or village in Tennessee, security must, as far as practicable, be sought in measures of a temporary and palliative kind. (a). Immediate and searching examination of sources of water-supply should be made in all cases where the source is in any degree open to the suspicion of impurity, and the water both from private and public sources should be examined. Where pollution is discovered, everything practicable should be done to prevent the pollution from continuing, or, if this object cannot be attained, to prevent the water being drunk. (b). Simultaneously, there should be thorough removal of every sort of house refuse and other filth which has accumulated in neglected places, future accumulations of the same sort should be prevented; attention should be given to all defects of house drains and sinks through which offensive smells are let into houses; thorough washing and lime washing of uncleanly premises, especially of such as are densely occupied, should be practiced again and again.

7 It may fairly be believed that, in many of the cities, towns, and villages of Tennessee, conditions favorable to the spread of cholera are now less abundant than at any former time, and in this connection the fact deserves to be noted that, during recent years, enteric (typhoid) fever, the disease which, in its methods of extension, bears the nearest resemblance to cholera, has perceptibly declined in the populous centers of Tennessee. But it is certain that in many places in the State such conditions are present as would, if cholera were introduced, assist in the spread of that disease. It is to be hoped that in all these cases, the local authorities will *at once* do everything that can be done to put their respective districts into a wholesome state.

Measures of cleanliness taken beforehand are of far more importance for the protection of a community against cholera than removal or disinfection of filth after the disease has actually made its appearance.

8. It is important for the public very distinctly to remember that pains taken and costs incurred for the purposes to which this Memorandum refers, cannot, in any event, be regarded as wasted. The local conditions which would enable cholera, if imported, to spread its infection in this State, are conditions which, day by day, in the absence of cholera, create and spread other diseases—diseases which, as being never absent from the State, are, in the long run, far more destructive than cholera, and the sanitary improvements which would justify a sense of security against apprehended importation

of cholera, would, though cholera should never re-appear in Tennessee, give amply remunerative results in the prevention of those other diseases.

CIRCULAR TO MAGISTRATES MAYORS AND OTHER OFFICIALS.

TENNESSEE STATE BOARD OF HEALTH,
NASHVILLE, September 1, 1884.

To _____

On March 26, 1877, the State Board of Health was established, and invested with important functions, but without means to carry on the great work imposed upon it by law. The following year the yellow fever was brought up the Mississippi river, and fastened its deadly fangs upon the city of Memphis. From thence it radiated through the Western Division of our State, carrying dismay into every household. It did not stop here, but, traveling with dread fatality on the lines of the railroad and river, it swept into the mountain city of Chattanooga, and into various towns and cities of Kentucky. Nor were its ravages confined, as heretofore, to towns, but it scattered all through the villages and farms of West Tennessee with a virulence and fatality unknown in the annals of this terrible pestilence. Its damage to life and property was beyond computation. Commerce ceased at its approach, business of every kind was destroyed, and the people suffered all the horrors of disease and want. Had it not been for the royal munificence of our friends and brethren throughout the Christian world, famine would have been added to the horrors of pestilence.

Taught by this most severe lesson, the General Assembly, by Act of March 24, 1879, enlarged the powers of the State Board of Health, giving it authority to declare quarantine, and to make sanitary rules and regulations with a view to prevent the introduction into, and spread of epidemic diseases within our borders, or, if possible, stamp them out should they unfortunately get a footing in our midst.

In the summer of 1879, Memphis was again severely scourged by yellow fever, and the wisdom of the above legislative action was clearly demonstrated, for the pestilence was prevented from spreading, while at the same time every possible alleviation was extended to the afflicted city by the timely and efficient measures enforced by the State Board.

Now again the distant but ominous shadow of a plague that has for over fifty years past been the terror of all Christendom, and spread dismay through five continents, is attracting the eager gaze of all observers. The fairest portions of France and Italy are to-day in mourning from the rapid spread of Asiatic cholera since June 13.

As long ago as 1833, Tennessee became familiar with this exotic plague. As recently as 1873, this fair State, from the Mississippi to the borders of Virginia, was terrified or scourged by the same. No epidemic of cholera has occurred in America without taking Tennessee in its course. All health officials in all European and American countries are now on the watch. Surely it becomes us to be wide-awake.

Small-pox is an enemy constantly at our door. Some portions of Tennessee have recently been put to much direct cost in money, and still more indirect cost by loss of business because of negligence in watching against its introduction. Other localities, equally liable, have escaped damage by timely prudence and energetic enforcement of law.

Diphtheria and scarlet fever are also perennial terrors, very greatly amenable to sanitary wisdom and laws.

It is confidently believed that by a co-operation of the local authorities with the State Board of Health, should the occasion arise, much alarm and needless sacrifice of life and property can be prevented. To gain the co-operation of a people scattered over a large extent of territory, it is absolutely necessary to adopt a uniform system under which to operate. Without system nothing can be done, with it, such measures can be carried out as will almost assure this State against invasions. In order to enforce such regulations as the State Board may adopt, it is absolutely necessary that each town in the State shall establish a Board of Health, as auxiliary to the State Board, and we now appeal to every city, town and village in Tennessee to at once proceed with the organization of such Boards. They should be constituted of firm, prudent and wise citizens, with one or more intelligent physicians. They may have to take such action as will require the exercise of all these qualities to the fullest extent. They may be placed in such a condition as will tax to the utmost all the best powers of the human heart and brain. So assisted, the State Board would indeed feel that half its labors were already accomplished. Otherwise, its efforts to secure safety would fall to the ground. We therefore urge you all to at once organize. When organized, communicate with this Board, that its aid may at any time be invoked if found necessary. We ea-

pecially urge upon the citizens of the State to so organize everywhere. Do not rest in fancied security upon any theory of atmospheric or topographical immunity. Whether your corporation is situated upon the marshes of the Mississippi or the plateau of the Cumberland Mountains, we beg you to organize. No harm will result should there be no epidemic. Should it come, you will be prepared to receive it. There is safety in preparation. "In time of peace prepare for war" is an adage that applies better to our present situation than to the necessities of any warlike nation. We are no alarmists, and I hope there will be no necessity for action. But should the necessity arise, the want of these bodies would be fatal.

Medical knowledge must guide and execute all scientific measures for preventing the introduction and spread of malignant epidemic diseases, yet law is absolutely necessary to enact and carry out these measures.

The power practically rests with our County Courts and municipal corporations. These, acting in concert with the State Board of Health, have the means, if not of absolutely preventing, at least of greatly mitigating, the terrors and damages of any pestilential visitation whatever. Tennessee should never be disgraced by the ignominious panics which even now are a blot upon European civilization. Hereafter as heretofore, we must be able to meet the visitations of God with no less calm bravery than we have withstood the less tolerable evils of great invading armies. Always we must be ready to lend a helping hand, with all the appliances of modern science and Christian charity, the one to the other. While in this grand warfare the clergyman and the physician must, as individuals, take the lead, in our capacity as communities Tennessee institutions compel us to rely upon the municipal corporations, and for the rural districts, which constitute the greater portion of the State, mainly upon the County Court.

By order of the Executive Committee.

J. BERRIEN LINDSLEY, M. D., *Secretary*

NOTE.—Copies of the laws are omitted here, and may be found at the beginning of this volume.

THE SMALL-POX—ITS RESTRICTION AND PREVENTION.

(Issued by the Tennessee State Board of Health.)

Of all epidemic forms of disease that afflict communities, none are more loathed and more to be dreaded, and yet none so easily to

be avoided, as small-pox. It is the most highly contagious of all contagious diseases. To avoid its poison we have but to avoid its presence.

There are two ways to obtain protection against it—forever shut it out by quarantine, or forestall it by submitting to its modified impress, which is vaccination. As neither means can be made absolutely perfect, it is recommended that they supplement each other by being made as nearly perfect as possible. Keep the entire population as thoroughly vaccinated as it is possible to do, and then see that no source of infection is introduced amongst them.

It has been heretofore recommended by this Board, and the recommendation has been promulgated by the State Superintendent of Public Instruction, that no pupil or teacher should be allowed to enter the public schools of the State without being first effectually vaccinated. It is hereby again urged that this recommendation be rigidly enforced, and it is further recommended that all Local Boards of Health, municipal and county authorities, take such steps as may be necessary *to secure the vaccination of their entire population, by affording free vaccination or otherwise*, and that all steamboats, railroad companies, and all public works, look to the certain vaccination of all persons in their employ.

For further security against the possible spread of small-pox, every community in its authoritative character—preferably through Boards of Health—should place under rigid isolation every case of small-pox or suspected small-pox. Persons who have been exposed to infection should be isolated during the period of incubation—fourteen days from date of exposure. Persons suspected of having the disease in its developing stage should be isolated until diagnosis is satisfactorily made out.

It is highly important that notice of an outbreak should at once be given the Secretary of this Board, so that he may render such assistance as may be necessary. Great injury sometimes arises to a community from a failure to attend to this precaution. If there is a Board of Health in the vicinity, it should be notified at once, and, at the same time, it is the duty of all citizens to take all proper measures in their power to restrict the disease. Hang up a yellow flag at the house to warn ignorant persons of danger. All persons should immediately be vaccinated, as they will, by this simple precaution, escape with, at the worst, varioloid, while, as a rule, one in every three cases among those unprotected by vaccination die of the disease. It is, therefore, vitally important that exposed persons should be vaccinated without delay.

In the absence of a Local Board of Health, it is the duty of the civil authorities to attend to these details. By act of the Legisla-

ture it is the duty of each County Court to provide nurses, sustenance, and pay all other necessary expenses arising from an outbreak of small-pox. In the interim of a session of the County Court, the Judge or Chairman of the County Court is authorized to issue warrants for the purpose of restricting the disease.

The State Board of Health stands ready to co-operate with Local Boards and county officers in the management of all cases of small-pox when promptly reported, and it urgently advises against all concealments, under a mistaken idea of suppressing excitement, as such a course may be fraught with the direst results. A belief that commercial interests may suffer is no excuse. A false confidence may arise which will lead to great injury. On the contrary, every publicity possible should be given, to the end that proper steps may be taken.

1. Vaccinate all persons who have not been vaccinated within a year, and continue to do so until it "takes," or until it is proven the system is not susceptible.

2. When a case of small-pox or varioloid occurs, isolate it at once, provide nurses who have had the disease and remove all other persons from the house. But keep all exposed persons either together or under surveillance, and, under no circumstances, allow them to scatter abroad until after the period of incubation. An old barn, or, in good weather, a tent should be used as a hospital.

3. All discharges from the patient, whether from the nose or mouth, and especially the crusts from the patient, should be burned as fast as collected. The night vessels should be kept partly filled with a solution of copperas. All utensils, such as dishes, spoons, etc., should be dipped in boiling water after use.

4. After the recovery of the patient, all bedding, clothes, etc., used in the room, should be boiled at once and thoroughly. Better still to burn them, if of little value. All persons leaving the sick room should be compelled to bathe well, and put on a complete change of clothing. The physician in attendance should do the same thing or wrap himself completely in a linen duster or gum overcoat, and tie a handkerchief around his neck, and these should be deposited in some out house for use on each visit.

5. No domestic animals, such as cats and dogs, should be permitted to enter the sick room. No person visiting a case should be permitted to go to any general assembly, such as church meetings or school until permission is given by the attending physician. No letters should be sent from the sick room. Out houses should be disinfected every few days with the copperas solution.

6. After recovery, patients should be kept to their rooms at least

two weeks after all crusts have disappeared, and then bathed and fresh, clean garments put on.

7. In case of death, there should be no public funeral. The body should be wrapped in a sheet saturated with a solution of zinc, four ounces to a half gallon of water, and placed in an air-tight coffin, and removed from the sick-room directly to the place of burial. The burial preparations should be carefully supervised by the health or local authorities.

8. After death or recovery, the room should be emptied of its contents, and, while they are being treated as before directed, the house should be thoroughly disinfected by burning sulphur. All wooden articles, such as chairs, tables and bedsteads, and all articles which cannot be boiled, must be left in the room, every possible opening stopped by strips of paper pasted or crammed in them, and then putting about five pounds of sulphur (roll) in an iron vessel with live coals, to be left for twenty-four hours. After this, it should be left open two or three weeks, and then washed with soap and water, or what is better, plastered or whitewashed. All articles not too valuable should be burned, as well as the house, if but a hut. Especial attention should be directed to the sale or purchase of rags and waste-paper by dealers, as the disease has been conveyed long distances through the medium of these commodities. Dealers should insist on the vaccination of all persons handling rags.

9. Should the disease assume the proportions of an epidemic, all public assemblies, such as churches, schools, and gatherings of any kind, should be interdicted by the authorities. They are justified in law to take this step.

Disinfectants.—At the head of the list we place CLEANLINESS; water, air and soap for use in general, are invaluable agents.

Burning.—By no means neglect to burn everything which cannot be satisfactorily disinfected.

Boiling.—One of the most practical and efficient modes of disinfecting is *boiling*. Articles of infected clothing, bedding and other things which should not be burned, and when this mode is at all applicable, must be thoroughly boiled for one or two hours, according to the nature of the article.

Chloride of Lime and Chlorine.—There are no better disinfecting agents than these when an infected house, room, furniture, and any articles that cannot be burned or boiled, are concerned. The chloride of lime must be used freely. Let it be sprinkled as a powder over the floors, and under the floors, if such places be accessible. Let it also be mixed with water into a thick cream. This may be

done in a saucer or deep plate. Then let moderately diluted sulphuric acid or strong vinegar be added until gases having a strong chlorine odor are given off. A number of such vessels may be exposed in the same room. To disinfect an ordinary room with chlorine gas, first close tightly all the openings of the room, then take a plate and half fill it with the black oxide of manganese, broken up into pieces as large as peas, cover these with muriatic acid, and heat gently by placing the plate on a hot brick or otherwise. The gas is easily evolved, and will readily diffuse itself. Care must be taken not to inhale this gas, as it is, unless greatly diluted, very poisonous.

Copperas Solution.—Copperas (sulphate iron) two pounds to a gallon of water. This should be freely used by sprinkling all around the premises and in the sewers and gutters. It is better to prepare a barrel of it at once, by putting the iron in a basket, and suspending it in the water.

Sulphur.—Roll sulphur, five pounds to a room, on hot embers. If an iron vessel is not at hand, use a tub of water with the sulphur kept out of the water on bricks or stones.

Sulphate Zinc Disinfectant.—Sulphate zinc (white vitriol), 1½ pounds, to six gallons of water, and three-fourths of a pound of salt added.

Chloride Zinc Disinfectant.—Chloride zinc, four drachms to the gallon water.

But remember one thing—disinfecting by fumigation or otherwise cannot compensate for want of cleanliness or ventilation.

All goods too valuable to be burned, or which cannot be boiled, such as furs, carpets, etc., may be hung up in the room while undergoing sulphur fumigation, and afterwards exposed to the air and thoroughly beaten.

DIPHTHERIA—ITS RESTRICTION AND PREVENTION.

(Issued by the Tennessee State Board of Health.)

Diphtheria is a contagious and infectious disease of great severity and frequent fatality—it is a constitutional or blood poisoning disease, and it is largely a preventable disease. In view of these facts, the State Board of Health urges upon the citizens of Tennessee the exercise of such precaution as experience has proven to be

effectual in its restriction and prevention, and to this end calls attention to the following facts and suggestions:

The evidence with regard to the origin of diphtheria at present seems to show conclusively that the disease sometimes develops spontaneously, its origin being a miasm, and particularly in certain conditions of filth; that it is more fatal where the soil is damp and chilly, especially on high land retaining moisture; that its fatality is increased and its spread favored by the presence of filth in the water used for drinking and particularly in the air breathed; that, like other diseases of its class, its epidemic prevalence depends upon conditions of air, soil, etc., which are at present unknown; that from eighty to ninety per cent. of the deaths are of children under ten years of age; and finally that all the circumstances giving rise to the various forms of ill health predispose to it. It is thought that closer contact with the air, person, or thing infected is necessary in order to produce the disease than in the case of small-pox, scarlet fever and measles. The discharges and exhalations from the nose and mouth are particularly dangerous, and it may be carried from one place to another and communicated by means of clothing, food, sheets, blankets, whiskers, hair, cats, dogs, toys, furniture, books, wall-paper, curtains, etc., and other articles, which have been contaminated in the sick-room, or been in contact with an infected person.

As a rule, the danger of exposure to the disease is in proportion to the malignancy of the case, but to this there are many exceptions, and exposure to the mildest case may be followed by the severest form of the disorder. Children are most susceptible to the disease, and may contract it in its worst type from the kiss of an adult who has what appears to be a trivial "sore throat."

The time that elapses between exposure to and the subsequent development of diphtheria in the person exposed, bears some relation to the malignancy of the disease and its prevalence as an epidemic at the time. Usually it appears within the first week, but in exceptional cases its appearance may be delayed to a much later period.

It is of the first importance that an outbreak of the disease should be the signal for the immediate observance of those precautions which are known to be most effectual in the restriction of any contagious disease, and in this respect the treatment should be as vigorous as in a case of small-pox or scarlet fever, the one rule of most imperative necessity being the isolation of the patient.

Immediately upon the appearance of the disease, the patient should be removed to a room as remote as possible from family occupancy. This room should be prepared for his reception by

removing from it all superfluous furniture, such as woolen carpets, extra clothing, books, and all window curtains, table spreads and other similar articles which cannot be subsequently cleansed by boiling.

The room should be large and sunny, and it is better if it be in the upper part of the house. Particular care should be taken to have it ventilated as thoroughly as possible, while the patient is protected from any direct draughts, in order to dilute the poisoned atmosphere to the utmost extent. This will be facilitated, and the care of the patient rendered easier, if it be practicable to place the bed so as to make it accessible from all sides.

No one should be admitted to the sick-room except the necessary attendants, whose garments should be made of such material as will admit of being cleansed by boiling.

No food which has been in the sick-room should be partaken of by the well; even the dishes which have contained such food should be cleansed by themselves.

Under no circumstances should the patient's soiled bed or body linen be mixed with other soiled clothing, or be admitted to the general wash; it should be at once cleansed by boiling water.

For the cleansing of the mouth and nose from the discharges, which are sometimes copious and always dangerous, bits of linen or cotton cloth, or pieces of soft paper should be used and immediately burned.

Discharges from the bowels and bladder, which are also sources of danger, should be received in vessels containing disinfecting fluids, and as soon as possible removed from the room and buried. If received on cloths, these should be burned.

For the purposes just mentioned, copperas, otherwise known as sulphate of iron or green vitriol, forms a cheap, convenient and efficient disinfectant. It is prepared for use by dissolving two pounds of copperas in a gallon of hot water. In malignant cases, it is recommended that an ounce of crude carbolic acid be added to each quart of this solution. These materials also form a good disinfectant for privies, drains and other foul places, and may be prepared for this purpose by adding eight pounds of copperas and one pint of crude carbolic acid to five gallons of hot water. From a pint to a quart of this solution used twice a day will suffice to keep down foul odors; a much larger quantity, however, is needed for the first application.

Another disinfectant recommended by the New York Board of Health which may be freely used in the sick chamber, and which is especially adapted for the reception of soiled clothing until it can

be further cleansed by boiling, is composed of sulphate of zinc (or white vitriol) eight ounces, carbolic acid one ounce, and water three gallons. Recent observations show that a solution of bichloride of mercury (1 part to 2,000), acts with great efficiency in arresting putrefaction and destroying bacteria which has been placed in it.

Still another convenient and efficient disinfectant is the solution of chlorinated soda known as Labarraque's disinfecting solution, which, diluted with from eight to twelve parts of water, may be used for cleansing utensils, washing the hands of attendants, etc.

The recovery of the sick person should be complete, and the cleansing of the person thorough, before he again mingles with the well, and, during the presence of diphtheria in any family, all members of that family should be excluded from the public schools and refrain from attendance upon public assemblies or unnecessary intercourse with others; and this isolation and practical quarantine should continue until, in the judgment of some competent physician, it is safe to omit the precaution.

In case of death the funeral should be conducted with little publicity and without exposure of the body, which should early be placed in a tight coffin, with some of the disinfectants above mentioned, as the exhalations from the dead body are especially dangerous. *In no case should children be permitted to attend such funerals.* The neglect of these precautions is known to have been the cause of the death of many persons.

Rooms from which patients who have had diphtheria have been removed should promptly be thoroughly disinfected by fumigation, first sprinkling well the room with water, and if there has been any special malignancy of the disease, all paper hangings should be removed from walls covered therewith, all other walls and ceilings should be freshly whitewashed, and the wood-work and floors be thoroughly scrubbed.

Sulphurous acid gas, or the fumes of burning sulphur, is an efficient, convenient and inexpensive disinfectant. Two pounds of sulphur will suffice for a room twelve feet square and ten feet high. It needs but to be burned in the room by putting it, in powder or small fragments, on live coals in a safe vessel, all doors, windows, and other apertures should be tightly closed during the burning of the sulphur, and for several hours afterward, and the room should then receive free and prolonged ventilation.

Finally, while isolation and disinfection should be thorough and persistent in the presence and for the restriction of diphtheria or other dangerous and contagious disease, it should be remembered

that no care to isolate patients or to disinfect premises already contaminated, can atone for the neglect of those precautions which all experience has demonstrated to be capable of mitigating the violence of, if not wholly preventing, contagious disease of every kind.

Cleanliness and purity of air are the deadly foes of all contagion. Pure air, pure water, and a pure soil, are essential conditions of healthful life, and the surest safeguards against disease.

Secure dryness for every part of your dwelling by thorough drainage, secure cleanliness for every part of your premises by careful removal of all decomposing animal or vegetable matter, by allowing no garbage heap or cess pool to remain near the house, and by frequently cleansing and disinfecting the privy, the contents of which may at all times be kept inodorous by the plentiful use of dry earth or coal ashes. Examine and correct any defects of sewerage. In short, let there be nothing left to pollute the atmosphere or poison the water supply. Let the sun and air have free access to the house, and especially to the sleeping rooms. Secure proper and well-prepared food and comfortable clothing, and "the pestilence that walketh in darkness" and revels in filth will pass you by, seeking a more congenial soil.

SCHOOL HYGIENE.

OFFICE OF DANIEL F. WRIGHT, M. D.,
MEMBER OF THE STATE BOARD OF HEALTH,

CLARKSVILLE, TENN., September 2, 1884.

To the County and City Superintendents of Public Instruction of the State of Tennessee.

SIRS:—For the forthcoming volume of the State Board of Health I am directed to prepare a report upon School Hygiene. After a full consultation with Superintendent Paine, the following blanks for returns, to be filled by yourselves, have been prepared. Please fill three copies: retain one for your own use, and send the other two to Hon. Thomas H. Paine, Superintendent of Public Instruction, Nashville, Tenn., who will forward one copy to myself and retain the other for the use of his office.

I rely very confidently upon speedy and prompt co-operation from a body of gentlemen to whom is entrusted the high work of overlooking one of the most vital interests of the people of Tennessee.

If you cannot make an earlier return, you may transmit your

answer to these interrogatories with your annual report to the State Superintendent, which will soon be due.

Very respectfully, DANIEL F. WRIGHT, M. D.,
Chairman of Committee on School Hygiene.

P. S.—I concur in the above, and request that the Sanitary Report be made to me as directed. THOMAS H. PAINE,
State Superintendent of Public Instruction.

The following is the blank return referred to in the above circular:

SITES.

1. Number of school buildings with high ground. *Ans.*———
2. Number with low grounds. *Ans.*———
3. Number well drained. *Ans.*———
4. Number badly drained. *Ans.*———
5. Number with shade trees. *Ans.*———

BUILDINGS.

6. Number of one-room school buildings. *Ans.*———
7. Number of two-room school buildings. *Ans.*———
8. Number of more than two-room school buildings. *Ans.*———
9. Number supplied with halls and recitation rooms. *Ans.*———

PLAY GROUNDS, AIRING AND LIGHTING.

10. Number with play grounds attached. *Ans.*———
11. Number with separate play grounds for boys and girls. *Ans.*———
12. Number with special provisions for ventilation. *Ans.*———
13. Number with arrangements for gymnastic exercises. *Ans.*———
14. Number with sufficient arrangement for lighting. *Ans.*———

GENERAL QUESTIONS.

15. Are the children superintended by teachers during recess?
Ans.———
16. What are the customary recreations for boys? *Ans.*———
17. For girls? *Ans.*———
18. Average number of windows in each room? *Ans.*———
19. Are the rooms carefully aired when empty? *Ans.*———
20. In how many rooms are vocal or calisthenic exercises practiced? *Ans.*———
21. Are pupils allowed to attend school who are not vaccinated or otherwise protected from small-pox? *Ans.*———
22. Are convenient and separate arrangements made for outhouses for both sexes? *Ans.*———
23. If any cases of chorea (St. Vitus' dance) have occurred last session, state how many. *Ans.*———
24. Add any other remarks you may deem necessary.

QUARTERLY SESSION, JANUARY, 1885.

NASHVILLE, January 6, 1885.

The Tennessee State Board of Health met Tuesday, January 6, 1885, at 11 A.M., in the office of the Board at the State Capitol.

There were present, Dr. James D. Plunket, President; Professor James M. Safford, M.D., Vice-President; Dr. G. B. Thornton, of Memphis; Dr. Daniel F. Wright, of Clarksville; Hon. E. W. Cole, of Nashville, and Dr. P. D. Sims, of Chattanooga.

The minutes of the October meeting were read and approved.

The Secretary read his report for the quarter ending January 1, 1885, and also special reports from the Health Officers of Memphis, Nashville and Davidson county.

The Secretary's report was received and ordered filed.

Dr. G. B. Thornton read a report upon the meetings of the Conference of State Boards of Health in St. Louis and Washington.

The report was discussed by the Board, and, upon motion of E. W. Cole, was received and filed.

Dr. Plunket, Chairman of Special Committee on Ozone, in a verbal report, stated that in obedience to the instructions of the Board, he had been active in obtaining the making of regular daily observations of ozone throughout the State.

Hon. A. J. McWhirter, Director of the State Weather Service, has extended every aid possible, and through his co-operation, already there are twenty-eight observers scattered through the State, making two daily observations—a night and a day observation. The following are their names, county and post-office address:

Geo. W. Robinette, Quarter, Claiborne county.
Jno. A. Cody,* Knoxville, Knox county.
Foster Clarke, Maryville, Blount county.
David Hart, Careyville, Campbell county.
S. E. Franklin, Sunbright, Morgan county.
J. T. Cowden, Grief, Bradley county.
B. L. Goulding,* Chattanooga, Hamilton county.
T. L. Denny, Cookeville, Putnam county.
W. K. Patterson, jr., McMinnville, Warren county.
S. P. Fergusson, Riddleton, Smith county.
Chas. F. Vanderford, Florence Station, Rutherford county.
L. N. Jesunofsky,* Nashville, Davidson county.
Prof. J. M. Safford, Vanderbilt University, Nashville, Davidson county.
J. A. Laughlin, Hurricane Switch, Maury county.
Rev. C. F. Williams, Ashwood, Maury county.
Samuel Stewart, Clarksville, Montgomery county.
W. J. Inman, Kingston Springs, Cheatham county.
Frank Winship, Pulaski, Giles county.
Sam'l Donaldson, Dickson, Dickson county.
Dr. Cicero Buchanan, Waynesboro, Wayne county.
H. R. Hinkle, Savannah, Hardin county.
Dr. M. D. L. Jordan, Milan, Gibson county.
A. S. Currey, Trenton, Gibson county.
E. P. McNeal, Bolivar, Hardeman county.
Louis Hughes, Dyersburg, Dyer county.
D. B. Cummins, Somerville, Fayette county.
Dr. T. W. Roane, Covington, Tipton county.
D. T. Flannery,* Memphis, Shelby county.

A number of other names are expected to be added to this list soon. The United States Observers at Knoxville, Chattanooga, Nashville and Memphis have also been supplied with material and a copy of the instructions issued by the Tennessee State Board of Health, and they are now actively engaged in making ozone observations.

The Committee had reprinted for distribution among the Observers of the State Weather Service, and other volunteer observers, the valuable and instructive paper on "Ozone in Nature, its Relations, Sources and Influences; a paper

*U. S. Signal Officers.

read before the British Meteorological Society, June 16, 1880, by John Mulvaney, M.D., Staff Surgeon British Navy ;" and also one "Relative to Atmospheric Ozone and the best Methods for its Observation, by A. W. Nicholson, M.D., of Otisville, Michigan."

To each observer your Committee have had forwarded by mail a copy of each of the above papers. A copy of the printed "Instructions for Making and Recording Ozone Observations, issued to the Volunteer Observers of the Tennessee Weather Service, by the State Board of Health;" a copy of the lithographed "Ozone Scale" and sufficient quantity of the Schonbein test-paper to last each for the four months ending April 1, 1885.

The observers will make their reports to the Director of the State Weather Service, and he will embrace the same in tabular form in the monthly printed report issued from that office. Thus will be accumulated and preserved the data regarding ozone in Tennessee, which will, at the proper time, be analyzed, arranged and reasoned upon by your Committee on Climatology, with the view of obtaining, if possible, practical deductions, especially so far as ozone may appear to be related to questions affecting the public health.

Dr. Wright, Chairman of Committee on School Hygiene, presented the following special report:

DR. J. D. PLUNKET, *President of the Tennessee State Board of Health:*

DEAR SIR—Having been instructed by the Tennessee State Board of Health to recommend a work on Physiology and Hygiene for use as a text book in the public schools of Tennessee, I have carefully examined many works written for this purpose.

My advice in the matter must necessarily depend largely upon the stage of the school course at which the subject is introduced.

The most usual arrangement in this State is to place it early in the grammar school course. I do not look upon this as the right place for it, believing that it can only be adequately treated as one of the select high-school subjects; but when so introduced, the

book which seems to me best adapted to the purpose is a work entitled "The Human Body, a Beginner's Text-book of Anatomy, Physiology and Hygiene," by Prof. H. Newell Martin, of the Johns Hopkins University. Prof. Martin has no superior in the United States as a scientific man, and with the assistance of Miss Hetty Carey Martin, has produced a work admirably adapted to present the subject to youthful minds.

If, on the other hand, the subject is reserved (as I think best) for the later stages of high-school education, I assign eminently the highest place to a work by Dr. Jerome Walker, Lecturer on the Diseases of Children, at the Long Island College Hospital. This work is entitled "Anatomy, Physiology and Hygiene, a Manual for the use of Schools, Colleges and General Readers."

This work is published by A. Lovell & Co., New York; its author is doubly qualified for the work he has undertaken, as he is in the first place a thoroughly scientific man, and secondly, he understands children, his practice having been mainly among them, and this work itself being the result of several years' lecturing in the public schools of Brooklyn.

If the above work is used in the high schools it may be thought desirable to introduce some elementary instruction in the primary schools to prepare the way for it. Nothing, I think, could be better than a little manual published by A. Lovell & Co., as parts of a series devoted to "practical work in the school-room," entitled "A Transcript of the Object Lessons on the Human Body," given in primary department Grammar School No. 49, New York City.

All these works give special attention to the evils of alcoholic beverages, adapting their teaching on the subject to the comprehension of children and young people at the age for which each is specially intended; the information on this subject is reliable; not like that frequently compiled by enthusiasts, much of which is, in after life, found to be unsupported by true science.

To recapitulate, the works I recommend are:

1. *For primary classes*: "A Transcript of Object Lessons on the Human Body," published by A. Lovell & Co., of New York.

2. *For grammar schools*: "The Human Body, a Beginner's Text-book of Anatomy, Physiology and Hygiene," published by Henry Holt & Co., of New York.

3. *For high schools*: "Anatomy, Physiology and Hygiene," by Jerome Walker, M. D., published by A. Lovell & Co., of Astor Place, New York.

I must not be understood, however, as recommending all three of these works for use in any one school: on the contrary, where the

first and third are used, the second would be superfluous; this latter is only recommended where one book alone on physiology is used.

I am, respectfully,

DANIEL F. WRIGHT,

Chairman Committee on School Hygiene.

Upon motion, the Secretary was directed to transmit a copy of the above report to Hon. Thomas H. Paine, State Superintendent of Public Instruction.

The Secretary presented his bond, as required by law, and, upon motion, it was referred to the Committee on Finance for approval.

SECRETARY'S REPORT

To J. D. PLUNKET, M. D., *President State Board of Health:*

SIR—It affords me pleasure to state that the closing months of 1884 have been unusually free from epidemics, and even from the apprehension of epidemics, so far as our own special field is concerned.

SMALL-POX.

This formidable and loathsome affection which, for several years past has given much labor and concern to all Boards of Health in Tennessee, and occasioned much expense in certain localities where due precautions were not observed, has almost, if not entirely, disappeared.

In this connection, the very efficient aid rendered to the Health Officers by the enlightened managers of the trunk lines of railroads crossing Tennessee should not be overlooked, specially is the example of the Illinois Central Railroad Company worthy of imitation.

DIPHTHERIA.

In several localities much apprehension has been caused by the appearance of diphtheria. Thus far the danger has been promptly met and no epidemic outbreak has occurred. The great benefits arising from vigilance, truthfulness, isolation and disinfection are now becoming apparent to the general public, and sanitary work made much more efficient. However, it must be observed that much apprehension is felt in quarters where public health is best guarded, as to dangers from this pestilence during the present winter. It follows that we should be wide awake. The warnings already given us are significant. In this connection the report of W. C. Cook, M. D., Health Officer of Davidson county, is of special value. It follows and is made part of this report.

PRECAUTIONS AGAINST THE GREAT TERROR.

At a time when all Europe is on the *qui vive* against the spread of Asiatic cholera from the central countries, France and Italy, to the east or to the west, and when all English-speaking America is alarmed and watchful, lest it should invade and desolate our own country in 1885, a Tennessee State Board of Health would logically and justly be held extremely derelict to duty if it did not enter heartily and effectually into all measures of prevention. Hence, very much of my time has been taken up with work coming under this head.

At the October meeting of this Board, Drs. Plunket and Thornton were appointed delegates to the Conference of State Boards of Health, to be held in St. Louis, October 13, 1884. Dr. Plunket's professional engagements precluded his attendance, and, by his appointment as President of the Board, I took his place. This Conference was held alongside of the twelfth annual meeting of the American Public Health Association, and was composed of men who, as practical sanitarians, are favorably known in twenty five States. Two days were devoted to full and free comparison of views, and the results given to the public in a carefully prepared report, which soon afterwards appeared in the leading dailies of the land, and in many professional journals.

One topic of overshadowing importance, to-wit: the province of the Federal Government in warding off the danger altogether, was deferred for fuller consideration to an adjourned meeting in Washington City, December 10, 1884. Dr. Thornton and myself were also punctual and faithful in attendance upon the two days' session of this Conference.

Here two facts were prominent: First, the uniform and deep impression among all Health Officers from seaport towns that in 1885 history would repeat itself. Publicly and privately I heard no dissenting voice. All agreed that, as in every previous instance when Asiatic cholera had appeared in Western Europe in epidemic proportions it crossed over the waters, so it certainly would in this case. Secondly, the desire that the Federal Government should avail itself of the great resources placed within its grasp by steamships and electric telegraphs, and for once make fair and faithful experiment as to the possibility of keeping the foul stranger off our shores altogether. All agreed that now is the opportunity for a first-class *experimentum crucis*, that the American nation is admirably situated for making the experiment, and that the present Congress should make immediate and ample provision for the same.

Unluckily a difficulty arises as to what hand shall conduct and manage the experiment. Upon this knotty question a special report will be presented by Dr. Thornton.

LOCAL WORK.

While it is agreed that the Federal Government may do much towards preventing the importation of Asiatic cholera, and while the great cities like New York may, as has been done, stamp it out even after it has obtained a foothold, yet, by universal consent, the main dependence must be on local sanitation. No one can foresee what bundle of dirty clothing to be opened next year will contain the germs of the pestilence. No one can certify that the history of 1873, when two hundred cities and towns in the Mississippi Valley were severely afflicted, will not be repeated. Hence, cleanliness, the first requisite in the home, the hospital, and in all sick rooms especially, must be the first requisite as a preventive measure against any disease which threatens the community, whether that community be great or small.

Therefore, I have given much time, labor and thought to stirring up an interest in the establishment of Local Boards.

In November, by direction of the Executive Committee, I visited Trenton, where a County Board was organized, as appears by the report made at the time to Chairman Plunket, hereunto appended. A copy of this report was mailed to the chairman of each County Court in Tennessee.

Immediately after the outbreak in Paris I addressed the following communication to the Mayors of ninety-three cities and towns in Tennessee

" NASHVILLE, November 24, 1884.

" *To his Honor, the Mayor of ————:*

" SIR Communications just received from Washington officially announce the recent alarming outbreak of cholera in Paris, France, which revives the well-grounded apprehension of an invasion of America next summer. It therefore becomes necessary that this office should have prompt answers to the following questions:

" 1. What steps have you recently taken, or are now in process of executing, to place your community in the best sanitary condition in view of this probable visitation?

" 2. Have you an efficient Board of Health? If not, it is respectfully urged that you at once take steps to supply so indispensable a necessity. Hitherto, every epidemic of Asiatic cholera in Western Europe has extended its ravages to America and always inflicted severe blows upon many localities in each division of Tennessee

" The State Board of Health is required to make a report upon the sanitary condition of its towns and country early in December. Hence prompt and full answers are needed."

Many answers to the above were received, which will appear in the report of the Board now in press.

From Washington City I addressed an advance copy of a report made to the Conference of State Boards of Health, December 11, 1884, to the editor of each periodical in Tennessee. This was widely circulated among the people by our enlightened and liberal press, which never fails to put forward every movement calculated to advance the State and benefit the people.

The additions made by donation to our library are unusually valuable, as appears from list appended.

I must emphasize the fact that the Executive Committee has met almost daily. It has, as requested by the Board, made all arrangements for bringing out the Report, 1880-84, very soon, in good style.

Also, it is proper to state that during my frequent official absences from Nashville, the office has been kept open by a competent Secretary, under the supervision and direction of President Plunket.

Valuable reports from Dr. Charles Mitchell, Health Officer of Nashville, and from Dr. George S. Graves, Secretary of Memphis Board of Health, are herewith submitted. These, with Health Officer Cook's report, will appear in full in the second Report of this Board, now in the printer's hand.

REPORT ON GIBSON COUNTY BOARD.

NASHVILLE, November 5, 1884.

To JAMES D. PLUNKET, M. D., *Chairman of the Exec. Com.*:

SIR:—At the October term of the Gibson County Court it was "ordered by the Court that Drs. S. W. Caldwell, J. A. Henderson, J. W. Penn, D. J. Tull and J. D. McKenzie be, and they are hereby appointed a Board of Health for the county of Gibson."

These gentlemen were called together at Trenton by Chairman Caldwell on Monday, the 3d inst., for the purpose of organization and consulting. Upon his application to the President of the Board I was directed to be present at said meeting, and to report the results of my visit, which I have the honor of now doing.

The Gibson County Board of Health was appointed for work, and are well distributed. Dr. Caldwell's residence is Trenton, Dr. Henderson is at Milan, Dr. Penn at Humboldt, Dr. Tull at Yorkville, and Dr. McKenzie at Bradford. Thus every portion of the county has a member of the Board near at hand. The Board was organized by the election of Dr. Penn, President; Dr. McKenzie, Vice-President, and Dr. Caldwell, Secretary. Some two hours were spent in considering the work before the Board.

All agreed that Tennessee furnished no finer field than Gibson

county for efficient sanitary work. A large, old, populous and healthy county, intersected by three great railroad lines, and with some ten or more flourishing towns or villages, it has evils inherited from the past, and evils threatened by the future, to remedy and prevent. In early days a fatal error was committed by allowing the rivers and creeks to be obstructed by the construction of mill-dams. Large tracts of most valuable lands are thus converted into laboratories of malaria, causing annually the loss of many thousands in labor, and the expenditure of many more for medical services and drugs. As the population is steadily growing this nuisance becomes more and more one of the first magnitude. How to abate it with just respect to vested rights is an urgent and troublesome problem, not only for Gibson county, but for all West Tennessee, which is now fairly entering upon a career of prosperous agriculture, to be frustrated alone by sickness and the ill-fame always thus caused.

The most noticeable ill to be anticipated at a very early day is the pollution of the water supply in Trenton and all the other flourishing centers of population in Gibson. Wells at a moderate cost now furnish the supply of water. Of course as dwellings increase in proximity and out-houses become numerous, a thorough and constant system of scavenging is requisite to prevent soil pollution and consequent poisoning of the wells. Right here is immediate and pressing work for active boards, not only in Gibson county, but throughout the State of Tennessee.

With the terrible lessons taught us by the dreadful epidemics of 1873, 1878 and 1879, and by the recent losses and present uneasiness in Europe, the public authorities are without excuse for negligence.

In conclusion, allow me to say that my visit was made most pleasant by the cordial manner in which the County Board appreciated the co-operation of the State Board, and that the cause of public health would receive a great impetus if every County Court in the State should at once follow the example so well set by old Gibson. The very first step towards preventing the invasion of an impending epidemic, or for mitigating the ravages and terrors of an epidemic when prevalent, is an organization which has the confidence of the community and the pluck and skill coolly to face panic terrors more alarming than those of war. Respectfully submitted by

J. BERRIEN LINDSEY, M. D., *Secretary.*

REPORT TO THE NATIONAL CONFERENCE OF STATE BOARDS OF HEALTH, WASHINGTON, D. C., DECEMBER 11, 1884, BY J. BERRIEN LINDSLEY, M. D., SECRETARY OF THE TENNESSEE STATE BOARD OF HEALTH.

Tennessee is, perhaps, as ready to meet an invasion of Asiatic Cholera as any of the United States. As far back as 1833 an intimate acquaintance with this scourge of the 19th century was formed. Lovely country towns like Shelbyville were decimated, while its capital city, Nashville, ranked with Lexington, Kentucky, most noted of all the cities afflicted.

In 1873, twenty counties, extending from the southwestern frontier bordering the State of Mississippi to the northeastern line co-terminous with Virginia, were laid waste.

The Tennessee public knows full well the brief but emphatic logic of history. Never has Asiatic cholera prevailed as an epidemic in Western Europe without crossing over to America. Never has it reached America without desolating Tennessee.

The great epidemic of 1873 deeply impressed the entire Tennessee community. The authorities were called upon to establish Boards of Health looking to the prevention, or at least the mitigation, of epidemics. The city governments of Nashville and Memphis soon responded to this demand, and in March, 1877, the General Assembly created the State Board of Health with limited powers and no funds.

In 1878 happened one of the most remarkable chapters in all the weird history of epidemics. Memphis, once the city of refuge for the stricken people of New Orleans, became the scene of woe and suffering not surpassed even by the vivid pictures of Thucydides, Boccaccio or De Foe. Tennessee, by nature a paradise, became known to all the world as the theater of yellow fever in its worst form, received the sympathy of Christian prayer in the hamlets and villages, towns and cities of the great Republic, and such overflowing relief in money as never yet has been surpassed for promptitude and whole-heartedness.

This terrible lesson was not without its compensation. In March, 1879, the General Assembly enlarged the powers of the State Board of Health, and endowed it with means sufficient to make these powers effective.

Likewise the National Legislature awoke from its long lethargy and created a Board of Health, March 3d, 1879, in harmony with the powers and usages of the Local or State Boards, then rapidly multiplying.

The ink was hardly dry upon these respective statutes before the

second great Memphis epidemic broke out and demonstrated the wisdom and practical utility of such machinery for applying the resources of sanitary science to the wants of populous communities. The National Board and the State Board co-operated with perfect harmony. Terror was averted. The tender mercies of Christian charity, and the magnificent resources of medical skill were extended without stint to the afflicted, and the epidemic did not spread.

As the result of this deeply significant chapter in recent epidemiology the people of Tennessee have great confidence in Boards of Health, State and National. They look to these Boards as official exponents of medical and general science in relation to the prevention of disease. They are ready to follow the advice and direction of these organizations, promptly and thoroughly, knowing full well that in common with all branches of theoretical and practical science, the God-like art of healing has made astonishing advances since the epoch of 1861.

The Tennessee State Board of Health, appreciating the heavy responsibility resting upon it because of the popular confidence it enjoys immediately upon the news from France, early in July last, commenced its work of preparation. Ten thousand copies of carefully prepared circulars were sent out so as to reach each one of the magistrates and other civil functionaries in the State. Every physician, pharmacist, dentist, and clergyman was also supplied. Said circulars have been widely copied by the leading newspapers, and thus the entire community awakened.

Systematic correspondence has been opened with the Mayors of over one hundred towns in the State, and with all the chairmen of all the County Courts, looking to the speedy organization of Local Boards. Encouraging responses are rapidly coming in, pledging immediate action, hence, it is safe to believe, in case Asiatic cholera should once more visit the University State of the South, that it will be met with the calm self-reliance becoming a people blessed with Christian hope, and the splendid resources of modern science.

REPORT ON THE PREVENTION OF EPIDEMIC CHOLERA IN AMERICA, ADOPTED BY THE AMERICAN PUBLIC HEALTH ASSOCIATION AND THE CONFERENCE OF STATE BOARDS OF HEALTH.

To the Conference of State Boards of Health:

MR. PRESIDENT AND MEMBERS:—Your committee, to whom was referred papers relating to the practical work required for the prevention of epidemic cholera in this country, respectfully report as follows:

ORIGIN AND DISSEMINATION.

There are three essential factors to the prevalence of cholera in this country as an epidemic—(1) the importation of the disease by means of ships more or less directly from its only place of origin in India; (2) local unsanitary conditions favorable to the reception and development of the disease; (3) persons sick with the disease in some of its stages, or things infected by such sick persons, to carry it from place to place. These three factors naturally suggest the methods of combatting the disease, for which there is needed practical work—international, national, and inter-State, State, and local. So far as relates to State and Local Boards of Health, their organization and activities are greater than ever before; but it must be admitted, that after cholera has been introduced into a country, inland quarantines are not easily and successfully maintained, although efforts in this direction are then advisable.

In view of the threatened introduction of cholera into this country during the coming year, and the consequent immense waste of life and property values through derangements of commerce, trade, and productive industries, it is the sense of this Conference that the general government should maintain such a national health service as shall, by rigid inspection at the port of embarkation, question the freedom from disease and infection of all persons and things from infected districts, and shall secure the surveillance of such persons and things while on shipboard, and, when necessary, detention at quarantine stations on this side for treatment and disinfection.

OFFICIAL INSPECTION.

In view of the present threatening aspect of Asiatic cholera, and the constant danger from other communicable diseases occurring at foreign ports having commercial relations with the United States, we urge upon Congress to provide for the appointment and maintenance at all such foreign ports where cholera, yellow fever, plague, small-pox, or scarlet fever exists, or are liable to exist, of medical officers of health, the same being either accredited consuls, or at-

ached to the consulates. The duties of these officers shall be to give notice, by telegraph, when practicable, of the existence or appearance of any of the above named diseases to some constituted authority in this country; to give notice of the departure of any vessel known or suspected to be infected for any port in the United States, and, whenever requested by the master of any vessel about to load or leave for this country, to inspect thoroughly such vessel in all her parts, and also her cargo, her crew and passengers, to use such cleansing and disinfection as he may deem necessary, and to satisfy himself that all persons about to sail are free from dangerous communicable diseases, are not recently from infected places, and are properly protected from small-pox, giving to her commander a certificate of the inspection, and of all precautionary measures taken. And it shall be the duty of the central authority in this country promptly to transmit intelligence of the existence of the above mentioned diseases at foreign ports and places, and of the departure of dangerous vessels for the United States and Canada, to all State and local health authorities in the country which may be interested in the same.

We further recommend, in case of those foreign ports which have no consular agents of this country or no telegraphic communication with this country, and which are liable to transmit pestilence through commercial intercourse, that one or more medical officers be chosen to visit such ports as often as may be deemed necessary by the central health authority in this country, so as to give trustworthy information of the health and sanitary condition of those places.

CANADIAN HEALTH ALLIANCE.

Inasmuch as the Dominion of Canada is equally interested with the United States in protecting itself and the United States from the importation of dangerous diseases, we suggest that Congress take such measures as will bring about concerted action with the Dominion and the British Government, by which the consuls of this country or of England at foreign ports shall examine and take such action as they may deem effective, and notify the authorities of such government as has authority over any port to which any ship may sail in the United States or Canada, in order that such government may be in a position to take effective measures against the importation of these diseases.

We are gratified that the authorities of the Dominion of Canada and of the Province of Ontario have taken active steps toward protecting the people of Canada, and indirectly those of the United States, by the adoption of extensive quarantine regulations. We

feel, however, that with respect to those regulations regarding the landing of passengers from the mail steamers along the St. Lawrence, etc., further special regulations for the thorough disinfection of the baggage and effects of all passengers, cabin or steerage, as come from infected ports or places, should be carried out in a manner similar to that recommended by the National Board of Health. Believing that the importation of cholera into this country has usually attended the presence of immigrants from infected countries, we therefore recommend that all such immigrants be prevented from landing at our ports until such time as the danger of the introduction of cholera by them shall have passed.

The inspection and quarantine service inaugurated by the National Board of Health, and set forth in the paper by Dr. Smart before this Conference, but which system is now inoperative for want of an appropriation by Congress, meets with our cordial approval. To enable these protective measures to be carried out, we recommend that Congress be urged in the strongest terms to legislate on this subject at an early date in its coming session, and to appropriate such funds as may be needful. The expenses incident to the work which has to be performed at foreign ports, and the establishment of refuge stations at points on our own coast for the detention and treatment of infected vessels arriving from foreign ports, should undoubtedly be borne by the National Government, and not by individual States or municipalities; for the benefits accruing therefrom are general, and not restricted to localities, although some ports and cities on the coast may have a more immediate interest in the matter than others in the interior. It is probable, however, that this national protective work may not be sufficient.

LOCAL SAFEGUARDS.

It will undoubtedly delay and lessen the chances of invasion, but it may not prevent invasion. The poison of the disease is subtle, and may effect an entrance into the country at some unguarded point. The funds necessary to the stamping out of the disease in a particular locality, and to the prevention of its spread to other localities, might in some instances be borne by the municipality or State affected; but should the disease occur in a locality which has failed or is unable to make provision for the occurrence, its spread to other cities and States would be imminent. The want of means at the infected point would be disastrous to many others. Congress has recognized the necessity for aid to State and Local Boards of Health under similar conditions in the case of yellow fever. In 1879 the sum of \$500,000 was appropriated, and placed at the dis-

posal of the National Board of Health, and the records show that of this sum \$160,000 was employed in combating the epidemic of that year. We therefore recommend that the influence of this Conference be used with the view of having appropriated by the National Legislature the sum of \$500,000, to be used, or as much thereof as may be needful, in case of a cholera invasion, in stamping out the disease from the infected localities, and in preventing its spread from State to State.

The removal of local unsanitary conditions favorable to the development of cholera is the special work of State and Local Boards of Health. Much has been done already in some States, but much remains which should receive immediate attention. Where it can be done State Sanitary Inspectors should be appointed to visit all towns and cities specially liable to the disease, to counsel with the local authorities as to the best methods of prevention. This work should be vigorously prosecuted before the disease reaches our shores.

ADVICE TO CITIZENS

The cause of cholera is contained in the discharges from persons affected by the disease, or in things infected by such discharges. Should the disease reach our shores, the first case, and after this the first case which reaches any given community, should be strictly isolated. All infective material from these and from any subsequent cases should be destroyed in such manner as to stamp out the disease. Intelligent sanitary precautions beforehand, and scientific disinfection and treatment in the presence of the disease, should take the place of the necessary cruelties of a panic. In case any city or town is infected, the same principles of isolation should in general be applied to the city as to the infected individual. Inter-course with other cities and places should be under sanitary supervision, substantially as set forth in the rules and regulations of the National Board of Health respecting the inspection of travelers, disinfection of effects, vehicles, etc.

Health officers and inspectors appointed by State or provincial Boards of Health should, in addition to other sanitary work, see that the localities have set apart, erected, or planned to be so set apart or erected, structures which shall possess the sanitary requirements of an isolation hospital. But as regards all necessary work by Local Boards of Health, most State and provincial Boards of Health have printed and issued documents which give ample instruction.

Your committee recommend that when this Conference adjourns it be to meet in Washington, D. C., the second Wednesday in December next, and that the Secretary of this Conference be directed

to invite the attendance at that time of the quarantine officers and the health officers of the principal cities in the United States and Canada; and that all delegates to that meeting be prepared to report the sanitary status of their State or locality, and what steps have been taken to improve the same, and to prevent the introduction of disease.

All of which is respectfully submitted.

HENRY B. BAKER,
Secretary State Board of Health of Michigan,
 H. P. WALCOTT,
Chairman Health Department of Massachusetts,
 S. S. HERRICK,
Secretary State Board of Health of Louisiana,
 PETER H. BRYCE,
Sec'y Provincial Board of Health, Ont., Canada,
 JOHN H. RAUCH,
Secretary State Board of Health of Illinois,
Committee.

Adopted by the CONFERENCE OF STATE BOARDS OF HEALTH at St. Louis, Mo., October 14, 1884.

ERASTUS BROOKS,
President of the Conference of the State Boards of Health.
 J. N. McCORMACK,
Secretary of the Conference of State Boards of Health.

Adopted by the AMERICAN PUBLIC HEALTH ASSOCIATION at St. Louis, Mo., October 15, 1884.

ALBERT L. GIHON,
President American Public Health Association.
 IRVING A. WATSON,
Secretary American Public Health Association.

NATIONAL BOARD OF HEALTH,
 WASHINGTON, D. C., November, 1884.

To the Secretary of the Tennessee State Board of Health:

SIR: By direction of the Executive Committee I have the honor to enclose herewith copy of a letter which has been sent to the Governors of the Several States. A copy has also been sent to the State Boards of Health and leading sanitary organizations of the country.

The danger to which our people are exposed in consequence of the prevalence of cholera in Europe is of so grave a character that I earnestly invite your attention to the subject of sanitary legisla-

tion, and bespeak your active co-operation in impressing upon the members of the State Legislature the necessity for at once providing the means whereby the health authorities may act promptly and efficiently in the event of an outbreak of an epidemic.

No effort, State or national, which can by any possibility aid in preventing the introduction and spread of the disease should be omitted, and, to be effective, provision for sanitary work should be made at once.

Very respectfully,

NATIONAL BOARD OF HEALTH,
WASHINGTON, D. C., November 10, 1884.

SIR.—The second section of the Act of Congress approved March 3, 1879 (20 Stat. at Large, p. 484, chap. 202) requires that the National Board of Health shall "advise the several Departments of the Government, the Executives of the several States, and the Commissioners of the District of Columbia, on all matters submitted by them, or whenever in the opinion of the Board such advice may tend to the preservation and improvement of the public health

In the execution of this provision of law I am directed to advise your Excellency that the presence of Asiatic cholera in epidemic form in Europe is a constant menace to the people of this country. The disease has pressed steadily westward during the past two years, carrying wide-spread desolation in its path, until now it has found a lodgment in European ports, whence more than one of the epidemics from which we have heretofore suffered have been brought to our shores.

• With our vastly increased intercourse with foreign powers and facilities for communication, the disease may at any moment make its appearance in this country. It is profoundly to be hoped that we may escape another visitation of this scourge, but following the history of past epidemics we can only hope for exemption from its attack, or, should it gain a foothold, for a mitigation of the suffering which necessarily attends its progress, by the most prompt and efficient sanitary service.

No portion of any State should be left unguarded, for our facilities for both local and inter-State communication afford ample means for carrying the poison far and wide throughout the land. In the absence of a sanitary service at any point, that point may, in the event of the appearance of cholera, become the center from which the infection may be spread to other portions of the States.

In view of the imminent danger which threatens our people, and the responsibilities resting upon the rulers and all in high official

station, your Excellency is respectfully and earnestly requested to call the attention of the Legislature to the subject, and to urge the necessity of appropriate legislation for providing the means whereby the most thorough sanitary service, State and local, may be immediately organized.

Much preliminary work requires to be done in many portions of every State to place the country in good sanitary condition, and to this end every organized community should be provided with a competent Board of Health, and the State with a State Board, supplied with every requisite for aiding and directing the local authorities in their sanitary work.

By the prompt adoption of such measures we may hope, if not wholly to escape an invasion of this dread disease, to be able, at least, to limit its ravages to the places where it first makes its appearance.

I transmit herewith a copy of the rules and regulations framed by this Board, and recommended for adoption by State and Local Boards of Health, to be enforced in the event of the prevalence of infectious and contagious disease.

Assuring you of the deep interest taken by this Board in all efforts looking to the preservation and improvement of the public health, as also of its desire to co-operate in such efforts in so far as it lawfully may,

I have the honor to remain, very respectfully,

W. P. DUNWOODY, *Secretary.*

His Excellency the Governor,

REPORT ON THE PREVENTION OF CHOLERA, BY J. H. RAYMOND, M.D., COMMISSIONER OF HEALTH OF THE CITY OF BROOKLYN, TO THE CONFERENCE OF STATE AND MUNICIPAL BOARDS OF HEALTH, AT WASHINGTON, D. C., DECEMBER 10, 1884.

[Brooklyn is the third city in America. It is a type of our rapidly-built, crowded American cities. Her people are remarkable for intelligence, her authorities thoroughly awake. This report was received with marked favor by all who heard it. I commend it to the attentive study of all interested in preserving the health of our beautiful Tennessee towns and villages. The admirable practical lessons it so clearly teaches can be readily adapted to our own wants.—J. B. L.]

DEPARTMENT OF HEALTH,

BROOKLYN, December 4, 1884.

To the Representatives of State and Municipal Boards of Health:

GENTLEMEN—In accordance with your request, I beg herewith to submit a report of the work of the Department of Health of the city of Brooklyn with reference to placing the city in a proper condition to meet the probable advent of cholera the coming summer.

WATER SUPPLY—Two years ago there existed within the city of Brooklyn three hundred and sixteen pump wells. These were the ordinary surface wells, dug to a sufficient distance in the earth to reach water, this distance varying from fifteen to one hundred feet. An analysis of the water of these wells showed that of this whole number but seventeen furnished water fit for human consumption, of the entire number three hundred and seven have, upon the recommendation of this Department, been filled by order of the Common Council, leaving but nine in the city. And these it is to be hoped the Common Council will close during the present winter, if not, should cholera come, they will be closed by this Department. Having thus done away with a possible agent in the spread of cholera, namely, the impure water furnished by surface wells, the attention of the Department was next drawn to the sources of the Ridgewood water supply, the only other water supply of the city, and investigation is now being made by representatives of the Department of Health and City Works, which will show to what extent, if any, this water supply is imperilled, and immediate steps will be taken to remove all possible sources of contamination. This being done, it may be safely assumed that Brooklyn need have no anxiety for the spread of cholera through its water supply.

PONDS—Cholera has appeared in Brooklyn as an epidemic three times since the year 1848. The last epidemic occurred in the year 1866 and resulted in the death of five hundred and seventeen inhabitants. The population of the city at that time was three hundred and thirteen thousand, about one-half its population at the present time. The disease appeared most prevalently and most fatally in the twelfth ward. This section of the city is one which is, to a great extent, composed of filled-in ground, being originally covered by salt water, with marshes and islands interspersed. In the improvement of this part of the city, streets have been constructed, leaving between them ponds of water, which being stagnant, became offensive. This was the condition of things in 1866. Why the disease attacked this portion of the city more than any other it is difficult now to say; but I find, in looking over the records, that special mention is made of a pump situated upon Van Brunt street,

which was looked upon by the health officials at that time as being largely instrumental in the spread of the disease in that section of the city. There is no doubt about one thing, whatever else may be said, and that is, that this section of the city was at that time water-soaked, and thus probably was adapted to the propagation of any germs that found a lodgment there. Since that period very many of these ponds have received from time to time a certain amount of filling, but not enough to completely obliterate them. Last summer (1884) special effort was made to fill these ponds, and also all others in the city. Fifty-five ponds have thus been filled at an expense of \$26,721. It is a source of gratification to me that all the filling of lots during this past summer by the Department of Health, has been with clean material, entirely free from garbage, and in every way unobjectionable.

At the present time there exists in this section of the city but one pond, and measures have been taken which will, before the advent of spring, cause this one also to be completely filled.

The same action which has been taken in the twelfth ward has been followed throughout the city generally, so that we have to-day in the city of Brooklyn but six ponds which will be likely in any way to serve as abettors in the propagation of the disease, should it come, and action has been taken in reference to these which will result in their abatement during the present winter.

PRIVY VAULTS.—The first census, so far as I am aware, that was ever made of the privy vaults of Brooklyn, was made at the request of the Department of Health by the police of the city in the year 1878. At that time there were twenty-five thousand privy vaults in the city. Of this number, fourteen thousand were known as not water tight; that is, built with stone as a rule loosely placed together, without cement, and with no attempt to prevent soil saturation. In addition to these, there were eleven thousand vaults which were nominally water tight, and were constructed in accordance with the ordinances; that is, they were built of brick and cement and were connected with the sewer. For several years this Department has been earnestly striving to eradicate from the city every privy vault which could be eradicated, and to-day every one which is upon a sewered street which is not legally constructed, is under orders for its abolition. During the past six years several thousand have been abolished, just how many it is impossible to say at the present time, as the figures are now being made up. We have, up to this time, been unable to proceed against the legally constructed privy vaults, eleven thousand in number. Attempts have been made by the Department to have the ordinances so altered as to entirely do away

with all privy vaults, when located upon lots adjacent to existing sewers. These efforts have thus far been unsuccessful. A communication is now before the Common Council of this city, calling their attention to the danger connected with vaults of this kind, permitting, as they do, human excrement to accumulate and decompose, and to serve as a nidus for the germs of disease, and requesting the repeal of the existing ordinance and its substitution by one which will not only prevent the further construction of these vaults, but will require the abolition of those now existing; and also requiring that where privy vaults are built upon lots in streets where sewers do not exist, such vaults shall be built so as to prevent all possibility either of the contamination of the soil or of the porous material of which the vault is built. It may be said, in passing, that in new houses no privy vaults of any kind are permitted where sewers exist—only water closets are allowed *

The communication to the Common Council in reference to this matter is hereto appended, and in this will be found in detail the reasons for this recommendation. Special arrangements have already been made with the Police Department by which all the privy vaults of the city will be inspected at least once a month, and immediate steps taken by the Health Department to abate any nuisances that may be found. If the desired change above referred to is made in the ordinances, and all vaults abolished which will thus be rendered illegal, the number remaining will be so small as to permit an examination as often as twice or even three times each month. These reports of the condition of the vaults will be followed up by disinfecting officers from the Department, who will attend to the disinfecting of the contents of these vaults. The officers of the Department will thus be enabled to disinfect and keep disinfected the contents of all vaults.

NIGHT SOIL.—Under the present arrangements night soil is collected from the vaults in a manner which is free from objection.

The removal is effected only during daylight, when any nuisances connected therewith could easily be seen, and after thorough disinfection of the material the apparatus employed is that which is known as "Odorless," so that there is no improvement which could be suggested in the method by which night soil is now removed from the vaults of this city. For the past few years, since the use of the dock at the Wallabout was abandoned for the removal of

* **RULE 17 ON STREETS THAT ARE SEWERED.**—All buildings that are located upon a street in which a public sewer exists, must be provided with water closets, either in the house or yard; privy vaults will not be permitted when a public sewer exists in the street.

night-soil and dead animals, the night-soil which has been collected in Brooklyn, has been removed to the country and deposited upon farms, and utilized as a fertilizer. Before permission was given to the scavengers to thus dispose of the night soil, it was required of them that they produce the permission of the owner of the farm, and also a permit from the Board of Health of the town in which the farm is situated. It was believed that these requirements would prevent the establishment of any nuisances upon neighboring towns. This system has now been in vogue for three years and the amount of night soil which has been thus disposed of is not far from five hundred thousand cubic feet. Should cholera come, it would probably be necessary to otherwise dispose of this material, and arrangements would have to be made to carry it to sea.

SEWERS —The condition of the sewers of Brooklyn as to cleanliness was probably never better than it is at the present time. The Commissioner of City Works, through his competent Superintendent of Sewers, has given this matter great attention, and I am persuaded that the reduction in zymotic diseases which has occurred in Brooklyn during recent years is in no slight degree due to this condition of the sewers. Special attention will be given to the sewers of those localities in which cholera may appear to see that they are kept cleansed and well flushed.

MEDICAL INSPECTION —The residences of the Medical Inspectors of the Health Department, twelve in number, will be connected by telephone with the Health Office, so that all reports of cases which are received can be at once communicated to them and receive prompt attention. In addition to the regular corps of Medical Inspectors, arrangements have been made by which a special corps of physicians will be appointed, whose duty it shall be to visit regularly all tenement houses, a list of which is on file in this office, and all localities where people are likely to be without medical assistance, with the object in view of administering remedies for the premonitory diarrhea, and disinfecting infected clothing and fumigating infected premises. The methods of disinfection and fumigation at present practiced are those adopted by the National Board of Health in 1879, and recommended by our State Board of Health. Sulphur, sulphate of zinc, common salt and copperas are the principal agents employed; in the present aspect of sanitary science the bichloride of mercury might with advantage be added to this list, as has already been done by some Boards of Health, notably that of Boston. The necessity for a thorough re-examination of disinfection and disinfectants was duly appreciated by the American Public Health Association at its recent meeting in St. Louis,

and a committee which was then appointed, is now at work upon this important subject.

HOSPITALS.—It is difficult, previous to the advent of the disease, to locate hospitals, inasmuch as such buildings should be situated in the immediate locality affected, it having been abundantly proved that the removal of persons sick with cholera to a long distance from their homes is very injurious, and has, in no small number of cases, contributed to a fatal termination. It may also be questioned whether a better plan than a general establishment of hospitals would not be to vacate the infected houses—that is, to leave within them only the sick, and to require those that are well to seek refuge elsewhere,* for a house which becomes infected by the sick person is, as is well known, a house that will infect those that are well. It will, of course, be necessary to have some hospital provision made for persons who are unable, through poverty or other cause, to obtain the necessary nursing and care at their own homes, but I question very much whether a general removal of infected persons from their homes to hospitals is a wise measure.

In this connection, permit me to call attention to the remarkable results reported by Edwin Chadwick, Esq., C. B., in his address entitled, "Precautions against Cholera," and reproduced in the appendix to this report. In the last epidemic of cholera which fell upon Limehouse, he says that the children of the pauper half-time school were distinguished by their entire exemption from any choleraic attack, and attributes this exemption to careful head-to-foot washing with tepid water. He gives also other striking instances of the comparative immunity which personal cleanliness confers on individuals, not only in times of epidemics, but under ordinary circumstances. His observations are well worthy of careful perusal, and of adoption, not only by the managers of public institutions but also by individuals.

ITALIAN QUARTERS—Special attention has been given to the quarters occupied by Italians, of which people there are in Brooklyn, upon the lowest estimate, ten thousand. Few of these can speak English, and to accomplish anything in the way of sanitary improvement among them requires the constant efforts of one of their own nation. Such an inspector has been engaged in this duty for several months, and will be continued in the work. The nature of the employment of this portion of our population is such as to bring them constantly in contact with rags, bones, and all manner

* In this connection see "Precautions against Cholera," an address delivered in August, 1884, by Edwin Chadwick, Esq., C. B., and especially the extracts given in the appendix to this report.

of filth which, unless watched, they bring to their homes and accumulate in large quantities.

The accumulation of rags is one which should be kept under the surveillance of Health Departments, and an ordinance has been asked for in Brooklyn to prohibit the storing of them, except in such localities as are approved.

LODGING HOUSES.—Brooklyn has, at the present time, nine cheap lodging houses, containing in all five hundred and thirty-two beds. In these houses congregate a large portion of the poor floating population of the city. Coming from vessels lying at the dock, or from neighboring cities, some are quite regular in their attendance, while others come to night and are gone to-morrow. These houses have been thoroughly examined from cellar to attic, and where defects of sewerage or ventilation have been found, they have been corrected. The disinfecting officers are at work, disinfecting and fumigating them throughout, and the sanitary inspectors have been directed to visit them frequently and keep close watch upon them. The proprietors have been summoned to the Health office, and instructions have been issued to them which will result in keeping these buildings in good condition, and in making us aware of the existence of any suspicious sickness.

LAUNDRIES.—The number of cases of cholera which have occurred from washing infected clothing, suggests that precautions should be taken in every public laundry. These establishments receive clothing from unknown sources, and are the means of spreading the disease. The idea has occurred to me that if proper disinfecting solutions should be kept upon these premises, and the proprietors be required to soak all clothing that was received in this solution, immediately upon its receipt, before washing, the danger of the spread of infection from this source might be avoided. Or some method of applying dry heat of sufficient intensity might be deemed more efficacious, or both combined.

FOOD SUPPLY.—It is conceded that the food supply during the times of a cholera epidemic is an important agent in the predisposition of individuals to attacks of the disease. Koch, if I mistake not, calls attention to the greater liability of contracting the disease, when from any cause the alimentary canal is in an abnormal condition. Whether this is true or not, we know that when the body is properly nourished, individuals are more able to withstand attacks of disease, and even to escape them, than when, from any cause, they are in a debilitated condition. With this in mind, special attention has been given to the food supply of Brooklyn during the past summer. My experience leads me to the conclusion that a

very much greater proportion of diseased animals is slaughtered and the meat of the same put upon the market than is commonly believed. During the past summer inspectors have been stationed at the slaughter-houses with reference to this detection of impure meat, and they have thus been enabled to discover and condemn meat which would otherwise have found its way into the market. In one of our large cities, at a not very distant date, scores of carcasses of immature veal were exposed for sale in the public market, and it was the opinion of men competent to decide that some of these calves had come into the world only a day or two before, and that others had been born dead. The effect of such meat upon the health of those unfortunate enough to eat it can readily be surmised. And here let me say that, in my judgment, no inspection of meat can be of much value unless it occur at the slaughter-house, and before the viscera have been removed. Many cases of tuberculosis and of contagious pleuro-pneumonia have been detected by the inspectors who were able to interrogate the lungs before they were removed from the animal, which would have passed a most rigid inspection had an inspection of the carcass alone been relied upon. No statistics, so far as I am aware, have ever been collected in this country of the amount of tuberculosis in our cattle. In the abattoir of Munich, in 1875, out of 55,882 head of cattle, 704 were tuberculous. It has been estimated that nearly six per thousand of the cattle of Bavaria are thus affected, and Fleming assumes that five per cent. of the cattle of Great Britain are affected with tuberculosis. The milk supply of large cities is also one to be specially kept under observation during epidemics, and this not only because there is danger of milk from diseased cows finding its way into the market, but because a large amount of milk furnished in our cities is adulterated with more or less water.

This water is, as a rule, from the ordinary water supply of the farm or of the stable, and is liable to be impure, and, just as infected water may communicate disease to those who drink it, just so may milk, adulterated with infected water, be the means of conveying disease. The adulteration of milk with water, therefore, is too looked upon as something more than an ordinary adulteration affecting the pocket of the consumer, and something more even than one depriving the growing child, depending upon it for its support, of a large portion of its nutrition, it may be a means of conveying cholera as it has time and again communicated typhoid fever. Courts, therefore, when complaints are made before them of selling milk adulterated with water, should have their attention specially directed to this danger, and asked to impose the heaviest penalties which the law allows.

Attention to the sanitary condition of cow stables is also very important. If the urine and excrement are permitted to accumulate and putrefy, either within the stable or its immediate vicinity, the milk will almost certainly be affected. Every one is familiar with the remarkable absorptive power of milk, and the facility with which it undergoes decomposition. The atmosphere of a filthy cow stable, laden as it is with putrefactive germs, cannot but act deleteriously upon the milk exposed therein.

To further carry out the object of protecting the milk supply, a critical examination by qualified veterinarians has been conducted, for the past six months, into the condition of the milch cows of the city, and measures have been put into execution with reference to the eradication of tuberculosis and contagious pleuro-pneumonia, believing that milk from animals thus affected is highly injurious, and that the continuance of such animals in a herd casts suspicion on all the milk produced. Arrangements are now being perfected for the establishment of a quarantine, to which will be sent all affected cows, where they will be kept under the supervision of the health authorities until it is deemed proper for them to return to the herds from which they came.

It seems unnecessary to call attention to the necessity for special effort in guarding the public against immature or unripe vegetables and fruit, in times of cholera; this is a work which will suggest itself to every sanitary officer, and therefore needs but an allusion here.

QUARANTINE.—Brooklyn, in common with other cities, must depend in great measure for its protection from cholera upon the quarantine authorities. The present arrangement by which our water front is constantly patrolled by the police renders it almost impossible for a vessel from an infected locality to come to our docks and unload its cargo without first obtaining the permit of the Health Officer of the port. It is of course among the possibilities that infected material may reach the city in trunks or packages which have found their way into our country through some other port than the port of New York; but I feel that if we can exclude from Brooklyn all cases and infected goods that find their way by ship to the port of New York, we will be able to keep the disease from obtaining a foothold in our city. The people of Brooklyn fully appreciate the difficulties under which the present Health Officer, Dr. William M. Smith, labors, and take this opportunity to express that appreciation and to commend his watchfulness and painstaking care: and we assure him that any and every effort which he may make, however arbitrary, with the object of protecting the

two million residents of New York and Brooklyn, will be sustained. We would also importune the Legislature of the State of New York to withhold no means needed to uphold the Health Officer in perfecting the quarantine station and its appliances in the harbor of New York.

I beg leave to submit to the Conference for its consideration and ratification, if approved, the following propositions:

First—That all surface wells should be closed at the earliest possible moment, and that great care should be taken that the water supply of all cities, towns and villages shall be of undoubted purity.

Second—That all privy vaults should be abolished wherever water closets can be supplied, and that wherever the existence of such vaults is necessary, that they should be rendered water-tight in such a manner as to prevent the saturation, not only of the ground surrounding them, but also of the materials of which they are built, and that the contents of such vaults should be kept constantly disinfected, and removed to a proper place at frequent intervals.

Third—That all stagnant ponds should be disinfected, and, when possible, the water removed by drainage or pumping, and the further accumulation prevented by filling with fresh earth or other material free from garbage or other filth.

Fourth—That great care should be exercised to keep at all times clear and free from obstruction all sewers, into which passes the refuse from dwellings, factories and other buildings, and that such examinations should be made as will detect imperfect plumbing in all buildings, and the defects immediately corrected.

Fifth—That extraordinary care should be exercised in reference to all tenement houses, lodging houses, and, in general, all places where large numbers of human beings congregate, that no accumulation of garbage or other filth be permitted in cellars or yards, and that frequent and thorough cleaning and whitewashing of such structures be required, and that householders should frequently and thoroughly examine their yards, cellars, closets and other out of the way places, to see that no filth of any kind has been deposited there.

Sixth—That the food supply be vigorously watched to exclude from the market all unwholesome meat, all milk adulterated or from diseased animals; and all unripe fruits and vegetables, and that cow stables be kept, at all times, clean, well whitewashed and free from all excremental accumulations.

Seventh—That all garbage, kitchen and household refuse, should be promptly removed from dwellings, stores and other buildings to a proper place, where it may be destroyed by fire, or otherwise disposed of in such manner as to occasion no nuisance.

Eighth—That such material should never be used in the filling of lots or disposed of by throwing the same in streets or vacant property, where it may decompose and exhale offensive and deleterious gases.

Ninth—That in view of the practical results reported by that eminent sanitarian, Edwin Chadwick, Esq., C. B., the authorities of all public institutions, and individuals as well, have their attention drawn to the great importance of the personal cleanliness of those committed to their charge, as one of the most efficient means of warding off an attack of cholera, and of reducing its force when once it has appeared.

Tenth—That all authorities of States, cities or villages be urged to adopt measures which will result in the amelioration of all conditions such as have been referred to in the foregoing propositions, with the warning that in the opinion of this Conference such conditions, if permitted to continue, will greatly promote the spread of cholera when it comes, and with the assurance that if requisite measures are promptly taken to remove them, the disease will be less likely to attack a community so prepared, and if attacked such a community will be better able to cope with the disease and to reduce its ravages to a minimum.

CONCLUSION.

In concluding this report, permit me to direct attention to the importance of this Conference which is now assembled in convention. In my judgment it is the most important, from a sanitary standpoint, which has ever convened in the United States, and to its deliberations the attention of the whole country is directed. From it will be expected, in concise and available form, recommendations by which communities may prepare themselves for the threatened invasion, and methods for its control when once it has appeared. It behooves us, therefore, to proceed with great caution, and to consider carefully and thoroughly all suggestions which may be made, and if need be to assemble again at an early date to adopt what, in the wisdom of this Conference, may seem best, so that, when our labors are completed, we may issue to the public such a plan as shall meet its wants and be recognized by medical and other men of science as having its foundation in the most advanced knowledge now attainable, and competent to meet the ends for which it was prepared.

Respectfully,

J. H. RAYMOND,
Commissioner of Health.

ADDENDUM.

The ten propositions printed on pages 8 to 10 of this pamphlet were, on motion, referred by the Conference to the proper committee, and by them carefully considered. This Committee reported them back, with amendments, and the following eleven propositions were unanimously adopted by the Conference.

First—That all surface wells should be closed at the earliest possible moment, and that great care should be taken that the water supply of all cities, towns and villages shall be of undoubted purity.

Second—That all privy-vaults should be abolished wherever water closets can be supplied, and that wherever the existence of such vaults is necessary that they should be rendered water tight in such a manner as to prevent the saturation, not only of the ground surrounding them, but also of the materials of which they are built, and that the contents of such vaults should be kept constantly disinfected, and removed to a proper place at frequent intervals.

Third—That all stagnant ponds, when practicable, should be disinfected, and when possible the water removed by drainage or pumping, and the further accumulation prevented by filling with fresh earth, or other material free from garbage or other filth.

Fourth—That great care should be exercised to keep at all times clear and free from obstruction all sewers, into which passes the refuse from dwellings, factories and other buildings, and that such examinations should be made as will detect imperfect plumbing in all buildings and the defects immediately corrected. In this connection special attention is directed to the necessity for the thorough ventilation of all soil and waste pipes, and to the dangers connected with untrapped and unflushed soil-waste and overflow pipes.

Fifth—That extraordinary care should be exercised in reference to all tenement houses, lodging houses, and in general, all places where large numbers of human beings congregate, that no accumulation of garbage or other filth be permitted in cellars or yards, and that frequent and thorough cleaning and whitewashing of such structures be required, and that householders should frequently and thoroughly examine their yards, cellars, closets and other out-of-the-way places, to see that no filth of any kind has been deposited there.

Sixth—That the food supply be vigorously watched to exclude from the market all unwholesome meat, all milk adulterated or from diseased animals, and all unripe fruits and vegetables, and that cow stables be kept at all times clean, well whitewashed and free from all excremental accumulations.

Seventh—That all garbage, kitchen and household refuse should be promptly removed from dwellings, stores and other buildings to a proper place, where it may be destroyed by fire or otherwise disposed of in such manner as to occasion no nuisance.

Eighth—That such material should never be used in the filling of lots or disposed of by throwing the same in the streets or vacant property, where it may decompose and exhale offensive and deleterious gases.

Ninth—That the attention of the authorities of all institutions, both public and private, and of individuals as well, be drawn to the great importance of maintaining a habit of personal cleanliness in the persons under their charge, as being one of the most efficient means of warding off an attack of cholera, or if it has once appeared, of greatly reducing its virulence and fatality.

Tenth—Should the cholera appear in any place in this country, the health authorities of the place should have immediate notice of the first case in order that prompt attention may be taken for complete isolation and disinfection.

Eleventh—That all authorities of States, cities or villages be urged to adopt measures which will result in the amelioration of all conditions such as have been referred to in the foregoing propositions, with the warning that, in the opinion of this Conference, such conditions, if permitted to continue, will greatly promote the spread of cholera when it comes, and with the assurance that, if requisite measures are promptly taken to remove them, the disease will be less likely to attack a community so prepared, and if attacked, such a community will be better able to cope with the disease, and to reduce its ravages to a minimum.

Extracts from "Precaution against Cholera," an address by Edwin Chadwick, C.B., before the Association of Public Sanitary Inspectors, at 1 Adams street, Adelphi, Monday, August 11, 1884:

"The proved secret of cholera prevention is cleansing, keeping clean, pure water, drainage, looking after all epidemic localities, getting the people out of them. We found in old times that not many yards separated deadly spots from safe ones. For treatment, house-to-house visitors to look after premonitory diarrhea, and one of the most essential provisions is some place for treating cases as close as possible to the attacked house. Removal of a collapsed or recovering case to a distance means death, and the best thing to do, whenever it can be done, is to remove the unattacked out of the house and to keep the patient at home. The house to be thoroughly cleansed before being again occupied. Generally a fortnight's airing and lime-washing is enough."

" But whilst much preventive service may be effected by cleansing of places very extensive prevention may be effected by active measures for the cleansing of persons. At the last epidemic visitation of cholera, which fell severely upon Limehouse, the children of the pauper half-time school there were distinguished by their entire exemption from any choleraic attack. The distinction was due to the careful head to foot washing with tepid water. The like distinction of immunity was presented in other half-time district schools in the metropolis. Indeed, we had experiences of its efficiency in ordinary times, which enables me to present it as a factor of at least one-third in sanitation. Thus, in a children's institution, where the death-rate was twelve in a thousand, it was pervaded by sewer gases. These were cleaned away, when the death-rate was reduced by one third. Then followed provision for regular daily head-to-foot ablution, when the death-rate was reduced by another third. The experience is similar with the washed populations of prisons. Sewer gas got into the Pentonville prison and the cholera got in with it, but the other well situated and well drained prisons, with their well washed populations, presented examples of entire immunity from the epidemic, as they do now from the ordinary epidemics which ravage the outside populations. Attention to the principle may be commended to you for your personal protection during your service. Nurses trained on Miss Nightingale's principle, who devote themselves to the specialty of nursing in the most infectious cases—those of scarlatina, give themselves head-to-foot ablutions with tepid water twice a day, and give themselves a daily change of clothes, and with attention to ventilation in the patient's bedroom, and to other precepts of Miss Nightingale on nursing, secure complete protection to others as well as themselves. Health officers, who have gone without harm through the most dire plagues, declared to the Academy of Medicine of France that they owed their security to the double head to foot washing with warm water. It is satisfactory, amidst the low retrograde sanitary administration, and the great loss of life occasioned by it in France, to adduce a valuable sanitary improvement from thence. The colonel of an infantry regiment, Colonel Lewis, has introduced a method by which he gives a superior cleansing with tepid water at a tenth of a penny per head per man. The man undresses, steps into a tray of tepid water, and after being wetted with a spray, soaps himself thoroughly, when with a two handed pump, a powerful spray of tepid water washes him from head to foot. Perhaps there is a double soaping. This is really a most valuable sanitary invention. The work is done better with five gallons of water, as against the eighty of the bath, and in less than five minutes of time instead of twenty. In

Germany they are advancing upon it in rapidity by arrangements of recesses, in rows, in which men enter in squads, and are subjected to simultaneous douches of tepid water. In fact, the cleansing by the jet has been introduced into Australia for bleaching the fleeces of sheep. They tumble the sheep into tanks of warm soapsuds. They are taken out and a powerful jet of warmed water is directed upon them, when the bleaching is effected, which reduces the weight of the fleece by one-third, at an expense of twopence each.

“Apparatus on the principle stated ought to be attached to schools, for relief from the foul atmosphere of filthy-skinned children, which generates the eruptive diseases, and is particularly needed for the poorer classes of the single-chambered families, who have no convenience for the process. It should be stated, as being proved, that a washed pig puts on a fourth more flesh with the same amount of food that is consumed by an unwashed pig. Irish cottiers are beginning to find out this economy, and are presenting their pigs as pinks of cleanliness. It is to be hoped that in time they will find out this economy for their children. Apparatus of the sort ought to be provided by manufacturers for the augmentation of the force of their work-people. The foremost direction of sanitary administrative force might well be given to the general application of the principle of washing with tepid water by the jet as a most effective preventive factor, on which a proclamation may be issued and promulgated from the pulpit on the text, ‘wash and be clean,’ as a defense against the coming pestilence, as well as against those we have with us.”

“The extension of large hospital accommodation is being called for as a means of providing for the coming disease. In our Metropolitan Sanitary Commission we made careful inquiry, as I have stated, as to what did do and what did not do on previous visitations. On our course we found that transmission to the hospitals did not do; that in the advanced stages the mere act of lifting for removal was fatal, and that sending patients to the hospital was, in a very large proportion of cases, sending them to increased danger and to death, and, with all the defects of the bad homes and their surroundings, it was the safest course, it were a better chance to let them remain there.

“We therefore rejected positively the preparation of hospitals for them, and relied mainly upon our policy of the preventative treatment of the locality, and house-to-house visitation and treatment of the premonitory symptoms. Our opinion as to the danger of hospital treatment has since been confirmed by Sir James Y. Simpson, who has shown from irrefragable statistics that the larger the hospitals and the higher the curative organization, the more

fatal the results, as against the smaller hospitals and as against inferior home treatment. This course of research has been since carried out in Paris, where there is the highest curative organization, perhaps, of any in Europe, where the conclusion of their failure as increased sources of danger is so strong as to occasion a demand for the suppression of the entire curative service of the large hospitals as an excessively expensive failure. This is set forth in a *memoire* on the causes of pauperism and its remedies, by Monsieur Baron, an *avocat*, in the Civil Service, crowned by the largest prize from our Academy of Moral and Political Science of the Institute. In the paper he cites evidence incontestably proving that of one hundred wounded carried to the hospital, nearly thirty died by the hospital, who, if they had remained at home, would undoubtedly have recovered, that the deaths in the hospital are as ten, whilst under home treatment by the *Societe des Secours Mutuels* they are only as six; that of those who escape, the mean duration of the recoveries in the hospital is thirty six days, whilst of those treated at home it is only nineteen days. Why, it is asked, such failures? Should such an excessively expensive organization be continued? It is characteristic of the reactionary administration in France, that with such undisputed conclusions, the practice of sending cholera patients to the hospital at Marseilles and Toulon should be maintained, where it apparently can only have been maintained to kill them. It is to be noted that curative services for our home army had always kept the beds of our army hospitals full, and never emptied them, whilst the preventative or sanitary service, so far as it has been enabled, with an imperfect organization, has largely emptied them, some of them by about one half. Sanitation has already emptied four thousand beds constructed on curative estimates for the home army.

REPLIES TO CIRCULAR OF NOV. 24, 1884.

CLARKSVILLE, TENN., November 24, 1884.

To the Secretary of the Tennessee State Board of Health.

Yours of the 22d inst. is received and noted. In reply would state that we have a good Board of Health—that we try to keep our city clean, have a Sanitary Inspector visit every house from two to three times in the summer months—he has to personally examine the premises. Dr C. W. Beaumont is Health Officer from whom you will be informed more particularly of our condition. I will call his attention to the matter at once. I think we handled small-pox last year perhaps better than any city in all this country.

Yours truly,

A. HOWELL, Mayor.

OFFICE OF THE MAYOR,
KNOXVILLE, TENN., November 25, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health* :

Your inquiry concerning our city to hand. Will simply say that we have an excellent Board of Health who are exerting themselves to have the city put in a good sanitary condition.

Very respectfully,
W. C. FULCHER, *Mayor*.

LEWISBURG, TENN., Nov. 26, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health* :

DEAR SIR:—There have been no steps taken in this (Marshall) county to organize a Local Board of Health, and this is to say, that by your direction and assistance, I can organize an efficient and able Board for this town and county.

You will please at once forward me blanks and directions for the organization, and then I will advertise, as if at your request, for our medical men to meet at my office for the purpose of the organization, and hope to place this community and county in good sanitary condition.

I am glad you are agitating this subject, and you will, I am sure, do the people a great good by perfecting the organization throughout the State.

Cholera has twice reached this (Marshall) county, and I trust that, through your influence, the people will be in condition to avert its ravages this time.

Yours truly,

P. C. SMITHSON,
President Board Commissioners Taxing District Lewisburg, Tenn.

MAYOR'S OFFICE, JACKSON, TENN., November 26, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health* :

MY DEAR SIR:—Your recent communication informing me of the outbreak of cholera in France, and the apprehension of its invasion of America next year, etc., is to hand. In response to your interrogatories, will say :

1. We have taken no recent steps at all to improve the sanitary condition of our city on account of any apprehensions of a visitation of the cholera. Our city is at present in a fair sanitary condition. We being in the interior, will naturally not become alarmed if the frontiers of our country are properly protected.

2. We have a Board of Health, at present not very efficient, on account of having but a nominal appropriation of money for it.

It can be made efficient when the necessity demands. Dr. S. H. Chester is President of the Board, and J. S. Herron Secretary.

You may safely report the city of Jackson in a good sanitary condition.

Yours truly,

HU. C. ANDERSON, *Mayor*.

COVINGTON, Nov. 29, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

DEAR SIR —Your highly appreciated communication has been received, and in answer will state that we have a regularly organized Board of Health in our town. The sanitary condition of this place I consider tolerable. Our town is by nature well drained. We have done nothing toward sanitation, especially since summer, but will appreciate any suggestions that may come from your honorable and useful body, and assure you that you have our most hearty and active co-operation. We await instructions from you.

Yours, respectfully,

S. R. SHELTON, *Mayor*.

GALLATIN, TENN., November 27, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

DEAR SIR —Our Mayor has just handed me your communication of the 24th inst.

I am City Physician, it is true, but my authority does not extend outside the workhouse.

I write to you for information. Our City Council meets next Thursday night, and I am particularly anxious to hear from you in the meantime. We want to establish a Local Board of Health, and I hope you will advise me what steps are necessary to take in order to accomplish it. Any suggestions from you will be thankfully received and PROMPTLY CARRIED OUT. We are anxious to put our town in the best possible sanitary condition.

Very respectfully yours,

ED. N. FRANKLIN.

CLEVELAND, TENN., November 27, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

DEAR SIR —We have taken no active measures just at this time in regard to the sanitary condition of the city, but always keep our town in pretty fair sanitary condition, by disinfecting with lime, keeping the streets free from offensive filth, and not allowing per-

sons to make filthy nuisances about their premises. We have a Board of Health, composed of all the principal physicians in the city, with Dr. A. McNabb as chairman.

Very respectfully,

A. N. PENDERGRASS, *Mayor*.

TRENTON, TENN., November 28, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

DEAR SIR—The Mayor of our city handed me your communication relative to the sanitary condition of Trenton, and requested me to reply to it for him.

1. The sanitary condition of the city is as good, if not better, than that of any place of the size in Tennessee. There have been fewer epidemics of any kind in Trenton than in any city or town of 2,000 inhabitants in West Tennessee. There is but one pool of stagnant water in the city limits, and that is small and rapidly dries up. It is on private property, and the owner will be required to drain and fill it if there should be need.

When the cholera prevailed at Union City about ten years ago, we had not a case here, and only a few cases of severe cholera morbus.

We are blessed with good drinking water, many of our people using cisterns. The State Board need entertain no fears of Trenton's sanitary matters.

2. Our city has a Board of Health, regularly appointed under our charter and by-laws, fully empowered to look after her sanitary condition. The Board has given satisfaction to the community, which is a sufficient answer to the question of efficiency. When threatened with epidemics heretofore, the health authorities have always been ready to meet them.

Yours respectfully,

T. J. HAPPEL, M.D.,

*Chairman Finance Committee City Council,
and Secretary Board of Health of Trenton.*

BOARD OF HEALTH,

KNOXVILLE, TENN., Nov. 29, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

SIR—By resolution of our City Board of Health, I was instructed on the 21st inst. to call the attention of our State Board of Health to the westward march of the Asiatic cholera and its rapid approach to the Atlantic shores, and to request the State Board to urge upon the local authorities the importance of making provision this win-

ter to escape the curse of the scourge, which seems sure to visit America next summer. I presume the State Board needs no such admonition from us; and, therefore, after the delay of a week, caused by my absence from the city, I content myself with assuring the State Board of the appreciation of our City Board of the importance of this subject, and our desire and readiness to co operate in any efficient and feasible measures to dispute the progress of the disease, if from Federal neglect or inefficiency it shall be allowed to land upon American shores.

Very respectfully yours,

H. H. INGERSOLL,

President Knoxville Board of Health.

UNION CITY, TENN., Nov. 29, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health.*

DEAR SIR:—Your communication of 22d inst. to hand, and in reply to your questions I have this to say

1. Our town is in a better sanitary condition than it has ever been before. In fact, I think its condition is very good.

2. We have a Board of Health; whether it is very efficient or not, I am not prepared to say. The Chairman of that Board will write you in a day or two. Besides, we have a Sanitary Committee, composed of three members of our Board of Aldermen, which committee seem to be very diligent in the discharge of their duties.

You will get further information from the Chairman of our Board of Health.

Very respectfully,

J. M. MOORE, *Mayor.*

SHELBYVILLE, TENN., November 30, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health.*

DEAR SIR: In reply to yours of 22d inst., will state that at the last meeting of our Board of Mayor and Aldermen, we elected a new Board of Health, consisting of three of our most prominent physicians, Drs Evans, Moody and McGrew, who, recognizing the importance of your suggestions, have cheerfully agreed to do all they possibly can, with the assistance of our sanitary committee, in putting our town in a *good sanitary condition*, which is far from being the case just now. I am satisfied that our Board *will* cheerfully lend their *assistance* to these gentlemen in this work in any manner they may ask for, and instructions have already been given for our sanitary committee to commence work at once; and *any* suggestions you may have to offer, at *any time*, that you may think would be of advantage to us in this sanitary work, will be appreciated.

Very respectfully,

H. C. WHITESIDE, *Mayor.*

UNION CITY, TENN., December 1, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

DEAR SIR—In answer to your questions of November 22, I have the honor to say: Union City is regarded by our physicians as being in moderately good sanitary condition. By order of the Mayor and Board of Aldermen, an inspection of premises was made last summer, and all nuisances and observable causes of disease were removed.

In answer to your first question, allow me to say, nothing has been done, or is in process of execution, recently, in view of the probable visitation.

Second question: We, I regret to say, have no organized Board of Health.

The Board of Mayor and Aldermen have a committee called "the Sanitary Committee of Union City," whose duty it is to see after abating nuisances, and other matters of public health.

Thanking you for your kind communication, permit me to say, suggestions from you will be properly appreciated at any time.

I am, dear sir, yours most obediently,

A. P. WATERFIELD.

P. S.—Doctor, I was requested by our Mayor a day or two ago to answer your letter of 22d November, which accounts for the above.

A. P. W.

BRISTOL, TENN., December 1, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

DEAR SIR—Circular received and noted. We have been looking to the cleanliness of the city generally, and using disinfectants about out-houses, hog-pens, etc. We have an efficient Board of Health. No epidemics of any kind prevailing with us. City unusually healthy.

Very respectfully,

J. A. DICKEY, M.D.,

Mayor and Chairman Health Committee.

FAYETTEVILLE, TENN., December 3, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

DEAR SIR—Yours of November 24 received a day or two ago. We have taken no unusual steps to put our town in a good sanitary condition. We have reinstated an old Board of Health, composed of Drs W. C. Bright, B. C. Newmau, C. B. McGuire and C. A. Diemer. We will now take immediate action on this subject.

Allow me to extend the thanks of our town and community for this timely warning.

Respectfully,

H. K. HOLMAN, *Mayor.*

DANBRIDGE, TENN., December 8, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

DEAR SIR—No steps have been taken, or contemplated, looking to the sanitary condition of our town. We have no Board of Health. Our town is small—about three hundred and fifty inhabitants, and well scattered over the high hills—location high and rocky, and the whole town is thoroughly cleansed every large rain. We have never found it necessary to take sanitary measures by the authorities. If our condition should require it, we would do so.

Yours, etc.,

J. R. CALVIN, *Mayor*.

DYERSBURG, TENN., December 8, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

DEAR SIR—Our Board of Health met Saturday, Dec 6, for the purpose of reporting to you, as requested, the sanitary condition of our town.

The town has had, for three years past, an efficient Board. At present three members of the Board are practicing physicians of the town, viz. Dr. H. F. Ferguson, Dr. W. H. Tucker, and myself, and the fourth member, B. L. Thomas, Mayor of the town. We have kept the town in a good sanitary condition the past season, and expect to use every precaution in the future to do so, and prevent, if possible, the cholera next season.

We would be pleased to see or hear from you at any time.

Very respectfully,

F. SUMMERS, M.D., *Secretary*.

MARYVILLE, December 22, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health*:

I would say in relation to the sanitary condition of Maryville, that it is not as good as King Solomon's was when he was in all his glory, yet there may be towns in this State that are not in as good condition so far as the health of the people is concerned. It is geographically located as well as any town in the State, with a population of about 2,000. What seems to be needed now in all the smaller towns of the State is authority by law to cause the necessary work to be done. We have a district of the second class at this place, but our Commissioners have not yet taken any action looking to the sanitary condition of the town in order to be ready to meet an invasion of the cholera should it come next summer, and I am afraid we will be scourged again by the disease. Now, our Commissioners are ready and willing to do anything in conformity with the laws of the State in a sanitary sense. There seems to be a want of Boards of

Aldermen and Commissioners of Taxing Districts going to citizens and saying to them that a certain work must be done in every city, town and village in the State in the next seventy days. My idea is that each Board that includes Mayor and Aldermen, or Commissioners of Taxing Districts, should appoint one or more physicians who have work in them, and that said physicians give any information necessary and see that the towns are cleaned up, and every citizen will be benefitted by this work all over the State. Now, local Boards of Health in small towns do not accomplish much, from the fact that the authority conferred by law is limited. Circulars and talk will not do the work or pay for it. Each town must have a head that will have the necessary work done at once. This work is of more importance to the people of the State than anything they could engage in at this time, for past experience has demonstrated that a strict sanitary condition of our homes in cities and towns is the only safety or checkmate we have so far as cholera and yellow fever are concerned. There is more to be done in preventing than curing these diseases. I hope Gov. Wm. B. Bate will recommend the Legislature to take some action early in January relative to the sanitary condition of the State.

J. P. BLANKENSHIP, M. D.

ROCKWOOD, TENN., December 29, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health* :

DEAR SIR—Your circular of Nov. 21 was handed to me a few days since, and since I am not honored with Mayorship, but will give you, as near as I can, the sanitary condition of our town. Our town is not incorporated, and has no Board of Health. The town is owned by the Roane Iron Company, and it is part of my duty to look after the sanitary condition of the houses, which we have thoroughly cleansed twice yearly, and all tenement houses white-washed inside and out once yearly (in the spring.) All out-houses are cleaned and disinfected twice yearly, and oftener if necessary. The wells are cleaned when needed. Our town is adapted to natural drainage—no ponds of stagnant water. The surrounding country is healthy, there being no epidemic or contagious diseases.

Most truly yours,

W. L. STEPHENS,

Physician and Surgeon for Roane Iron Company.

CAMDEN DEPOT, TENN., December 31, 1884.

DR. J. BERRIEN LINDSLEY, *Secretary State Board of Health* :

DEAR SIR—Yours of Nov. 25 received, but was mislaid, and on finding, I answer at once.

We have a Board of Health here, which was organized three years ago, but has never been in an active, organized existence since. I will bring the matter before the next County Court, and have our Board of Health re-established.

Wishing you success in your battle with the dread visitant, I remain, very respectfully, yours, etc.

W. P. MCGILL, M.D.

QUARTERLY SESSION, JANUARY, 1883.

MORNING SESSION.

NASHVILLE, January 2, 1883.

[The proceedings of the first day of the January Quarterly Session, 1883, should have been inserted in their proper place, but follow here:]

The Tennessee State Board of Health met at 11:45 A. M. The following members were present: Dr. T. A. Atchison, President, Nashville; Dr. J. D. Plunket, Vice-President, Nashville; Dr. G. B. Thornton, Memphis; Dr. P. D. Sims, Chattanooga, and Dr. Jas. M. Safford, Nashville. Col. E. W. Cole was absent, owing to the serious illness of a relative. Col. John Johnson, of Memphis, was also absent.

Dr. W. M. Clark, the retiring Secretary, and Dr. C. C. Fite, the Secretary elect, were also present.

Dr. Clark read the proceedings of the October meeting, and they were approved. He then read his report, which was as follows:

REPORT OF THE RETIRING SECRETARY.

To the President and Members of the State Board of Health:

GENTLEMEN—At the date of your last meeting, you will remember, the small-pox had well nigh disappeared from the State. It had been my effort to second your endeavors to extirpate it entirely before cold weather set in, knowing its disposition to spread worse in winter. It was, therefore, with pleasure I looked upon the situation, and had every reason to believe we would succeed. With the exception of a few convalescents in Nashville and Chattanooga, there was not a single case in the State.

On the 5th of October I received a letter from Dr. Williams, of Holt's Corner, announcing the presence of a suspicious case near him, on Flat Creek, Williamson county; but the third day he wrote it was not small-pox. Again on the 10th, he wrote that another case had occurred, which left no doubt of its character. I took all

the necessary steps to aid him by forwarding virus, circulars, etc. It prevailed in that section about a month, there being eight cases and four deaths. About the 20th I received reports of its existence in Gallatin, it having broken out there, some said, from an imported case, while others claimed it came from an infected house from the previous visitation. They had some ten or twelve cases, though I have not received any detailed report since its disappearance.

About the 6th of October I received a letter from Mr. M. P. Fletcher, Recorder of Shelbyville, asking what disposition they must make of a person exposed to small-pox infection who had come to their town. I answered them to vaccinate him and keep him under strict surveillance until after the period of incubation. He wanted, also, to know if they had authority to send him away. I answered, if he was a citizen of Shelbyville they had no such right, and if he was a citizen of some other place, they could not endanger that place knowingly. But after vaccination, they could send him to his home by properly notifying the officials.

On the 25th I received a letter from Dr. McCormack, of the Board of Health of Bowling Green, asking if it would be necessary for that Board to declare quarantine against Gallatin. I answered, giving him such information as stopped any such step.

On the 3d of November I was summoned to Franklin to see about some cases at Milvue, a village six miles east of Franklin. I went there, and adopted the requisite steps to prevent its spread. But a few days after I was again called out there on account of a case occurring in the town itself. A family of negroes named Williams lived in the most populous portion of the town, and they had a son-in-law living in Nashville, who, finding himself taking the small pox, visited the family clandestinely, where he remained concealed several days. He then returned to this city, and was at once sent to the pest house. The negroes at Franklin, not knowing the nature of the disease, freely visited the first case, the father and in this way a large number, living at different points, became exposed. At my direction a pest house was erected three miles off, and the patient sent there. In a few days his family, in three different directions, contracted the disease and it bid fair to spread over the entire county. I visited them several times, and used every effort in my power to put a stop to it. This was the only point, at that time where danger of great spread was feared, and I used extra exertions to put a stop to it. To do so to better advantage, with the consent of the President, I procured Dr. Fite's services for the office, and devoted my entire time for two or three weeks, until, unfortunately, I was inoculated with small pox virus, and had to suspend my labors. At the time we had the disease well under

control, and I had reason to believe it would have no further spread. I left it under care of Dr. Sledge, a young physician, who devoted his entire time to it. But within the last few days it has taken a fresh start in some manner—a fresh importation it is believed—and at the present time the situation is quite alarming.

I received, about the first of November, a postal from Dr. Boyd, Health Officer of Knoxville, announcing its presence in a family near there, and at the last report I had from him there were four cases. Since then Dr. Fite has conducted the correspondence, and his report will embody the particulars of that case, as well as at South Pittsburg, where he went at my request and at their call.

I also received letters from Mossy Creek announcing its presence at that place, but, as Dr. Fite conducted the correspondence, I leave that report also to him.

Last week the President, Dr. Atchison, referred a letter received by him from a committee of citizens of Morristown asking for authority to quarantine against Mossy Creek. I answered them it was certainly in the power of the Board to do so, but no individual member of the Board had that authority, and as the Board would meet Tuesday, I would refer the matter to them direct; but advised them, instead of doing so, to appoint inspectors and make it their duty to watch closely and examine every person who came from Mossy Creek, and unless they were satisfied with the examination, turn him back, as they had a right to do.

Dr. Stephens, Pest-house Physician for Davidson county, shows the number of cases treated to be as follows:

In hospital October 1, 1882	11
Admitted during quarter.....	57
Discharged.....	23
Died from small-pox.....	9
Died from other causes.....	4
Remaining in hospital.....	41
Admitted since last report.....	6
Remaining at hospital.....	47

The number of cases of small-pox in Williamson county to date is 56, including Flat Creek, 8, 4 fatal; Franklin, 48, 8 fatal; 19 confluent; 8 in bed at this time, and the remainder convalescing.

Since my last report there have been the following additions to the library:

Sixth Annual Report of the State Board of Health of Wisconsin.

Fortieth Annual Report of the State Board on Vital Statistics.

Negro Mortality, a paper read in the American Medical Association by Dr. Thornton.

Biennial Report of the President of the Fire and Police Commissioners of the Taxing District of Shelby County.

Annual Report of the National Board of Health for January, 1882

And now, gentlemen, this closes my official connection with your honorable body, a connection which has been peculiarly pleasant to me, and in which I have ever received the utmost kindness and consideration for shortcomings. I feel deeply grateful to you, each and all, and trust you will have a long and prosperous career of honor to yourselves and usefulness to your fellow-man, for whom you have been so long and assiduously laboring.

Respectfully yours,

W. M. CLARK.

Dr. Fite, Secretary-elect, having acted as Assistant Secretary for a month past, made an additional report, as follows:

REPORT OF DR. C. C. FITE, SECRETARY AND EXECUTIVE OFFICER
OF THE STATE BOARD OF HEALTH.

Mr. President and Gentlemen of Tennessee State Board of Health:

At the request of the Executive Committee of the Board I attended the meeting of the American Public Health Association at Indianapolis, October 17, 18 and 19

The meeting was not a very large one, but was a most successful one in every other respect. The popular element was not predominant as it had been at most of the previous meetings of the Association nearly every one present being an active, working sanitarian.

The papers read and the discussions thereon took a wide range, and to attempt a thorough analysis of them would take several hours of your time. I therefore give a brief outline of the more salient features thereof, as they remain at this time impressed on my memory.

Vaccination received a large share of attention, and, in fact, nothing was brought up that met with so many ready to discuss it. During the second day's morning session, Dr. S. W. Abbott, of Wakefield, Mass., read an elaborate paper on the uses and abuses of animal vaccination. The subject was then made the special order for the afternoon session, and the afternoon not being time enough, it was made the special order for the next afternoon. Several short papers were read bearing upon the subject, and a large number of members addressed the Association upon the question in all its bearings. It appeared to me that the strong points developed were these. As vaccination has often to be resorted to on short notice

and very extensively, arm to arm vaccination is not practicable; but where it can be done, a perfectly healthy child, with a pure ancestry, that has been vaccinated with pure bovine virus, offers the best, easiest and cheapest subject to obtain the germ from, the lymph being taken from the arm at the proper time and applied immediately. This being the preferred plan, scabs were universally condemned. When the method mentioned above cannot be resorted to, fresh, pure bovine virus, dried on iron points and properly used, was considered the most feasible plan for general vaccination. Some propagators put albumen on the point to cover it, and others put it on after the virus is on to cover the virus. Others mix mucilage with the virus. Careless operators allow pus cells, blood and debris to get on points, getting all they can from the cow to make each case cover as many points as possible, but any one skilled with the microscope can detect all this fraud. The rules for preparing virus should be carefully observed, and it is believed that the large majority of propagators now do what is right about it. Vaccine lymph is what should be put on the point, and nothing else.

Dr. Caball, President of the National Board of Health, read a paper on the work of the Board. The paper was a lengthy one, and was a defense of the National Board.

After the reading a special hour was set for discussion. The discussion was nearly altogether a one-sided affair, the Association heartily and unanimously endorsing the work of the Board.

Dr. Bailhaiche, of the United States Marine Hospital Service, and also a member of the Board, attempted a defense of the methods of quarantine instituted by the United States Marine Hospital Service during the last season, but he met with no response, the Association being united in the opinion that the National Board of Health was the proper body to attend to such matters, and that Congress, in putting it into the hands of the Secretary of the Treasury, and he delegating it to the Marine Hospital Service, was a grievous error and fraught with evil to the country. The National Board of Health being free from political complications, and their time and labors being altogether in that direction, the efforts of the Marine Hospital Service were regarded as a grasping for power and influence out of its sphere. A resolution was adopted endorsing the National Board of Health.

Dr. Gihon's proposition in regard to legislation to prevent a certain class of contagious diseases, was warmly discussed and was finally laid upon the table, the general opinion being that the country was not ready for any such legislation. Dr. Gihon firmly announced that he was not going to be driven from the field in such a

summary manner, and many members warmly sympathized with him. The question will come up again in some other shape, perhaps.

Dr. Thornton's paper on the negro mortality of Memphis was regarded as one of the most valuable contributions to the meeting, and was freely discussed. A copy of the paper has been received and placed on file in this office.

There was a good deal of discussion of registration methods and of vital statistics, members from the Eastern cities stating that such laws worked well with them, and that it was there regarded as a physician's public duty to make such returns, and there was no question of fees; but a great many were of opinion that in Western and Southern communities a small fee was necessary to secure accurate returns, the people at large not appreciating the value of such matters, and the medical profession not having been trained to it. It was very forcibly said that vital statistics would be comparatively valueless in any State until there were well executed laws controlling the practice of medicine.

Acting under instruction of the Executive Committee of this Board, I made a visit to the Sequatchie Valley December 7 and 8, and met with leading citizens at Jasper and South Pittsburg. The visit was made at the urgent request of citizens of both places, who desired to take steps to protect themselves against small-pox. Soon after my visit a Board of Health for Marion county was organized at Jasper. W. M. Bennett, Esq., the Assistant Chairman of the County Court, being made President, and Judge Foster V. Brown Secretary. Esquire Bennett has ordered a general free vaccination of the entire county, and made every arrangement to protect the county against small-pox. They had a few cases, but they were closely quarantined, under the management of Dr. Griffith, and there have been no new cases.

A Board of Health was also organized at South Pittsburg, with Dr. W. R. Townsend, the physician of the Tennessee Coal, Iron & Land Company, as President, and Mr. R. M. Payne, Secretary. They are energetically seconding the County Board in its efforts, and have an inspector to watch for cases of small-pox, and they also have a pest-house in readiness.

On my return, I had an interview with the Mayor and Recorder of Tullahoma, and urged upon them the necessity of a regular Board of Health. Their sanitary committee took very active and efficient measures with a case of imported small-pox, and have prevented its spread; but a town that depends so largely upon her reputation for healthfulness should have an organized Board of Health to take every advantage of her fortunate situation.

There was an imported case of small-pox at Jackson, and it was not discovered until five persons had contracted the disease. Dr. John J. Taylor, the Secretary of the Board of Health, informs this office that there have been eleven more cases developed in people who were thus exposed. They have been quarantined, and no further spread is anticipated.

Chattanooga has continued to suffer from small-pox, and notwithstanding the energy displayed by the health authorities, the disease has a hold there yet. They have such a large floating population that it is extremely difficult to discover every case in time. Dr. G. A. Baxter, Vice-President of the Chattanooga Board, met with the Executive Committee of this Board, and gave a detailed statement of their methods of work. The report of this consultation was published in full in the *American* the next morning, and is hereto appended and made a part of this report.

Knoxville has had to struggle with the disease also, and there has been an active correspondence between Dr. C. Deaderick, the President of the Board, in regard to methods of preventing the disease. An absolute quarantine was asked for against Chattanooga, but this Board did not see the way clear to advise such a step, the opinion being held that the only effectual quarantine against small pox is vaccination and a careful isolation of any imported case.

The disease has also appeared at a number of other places in the State, notably in Jefferson county. Nearly all the cases originated amongst negroes who had escaped from quarantine at infected points. The correspondence in regard to the cases has been very heavy, and it is believed much good has been accomplished by unifying the methods of antagonizing the disease.

A great deal yet remains to be done, but there are daily indications that the people appreciate more and more the fact that disease can be in a great measure prevented, and that human life can be, in the aggregate, lengthened, and that life can be happier and stronger while it does last.

And, gentlemen, allow me to say, that in entering upon this great work, under your direction, I have high hopes for the future, and will endeavor to be able at the end of my five years of service as your Executive Officer, to see a great and glorious good work accomplished.

Having engaged in local sanitary work for upwards of four years, I know how much there is ahead, and the up-hill work it is to do it; but give me your constant sympathy, your advice on every point, and my work under your instructions will be at least characterized by energy and a determination to accomplish much. What the results will be only the future can determine.

To Dr. W. M. Clark, the retiring Secretary, allow me to tender my thanks for the many kindnesses shown me, and for the valuable advice he has so freely given.

Respectfully submitted.

C. C. FITE.

The reports were received and ordered published.

Dr. J. B. Thornton made a report of the cases of small-pox in Memphis in October, November and December, and also a full report for 1882.

In Shelby county there were 365 patients admitted to the pest-house; of these, 220 had never been vaccinated, and the death rate among them was 61 per cent., while amongst those who had been vaccinated early in life, the death rate was only 26 per cent.

Dr. Thornton was appointed on the committee to settle with the Secretary, in place of Col. Johnson, absent.

The Board then adjourned to meet again at 3 P. M.

AFTERNOON SESSION.

NASHVILLE, January 2, 1883.

The Board met at 3 P. M.

Dr. C. C. Fite presented his bond as Secretary and Executive Officer for the ensuing five years, Dr. R. F. Evans and Hon. Edmund Cooper, of Shelbyville, and Mr. L. B. Fite, of this city, becoming his bondsmen.

Dr. Thornton's report on Abattoirs was referred to the Committee on Publication.

Dr. Plunket, Chairman of the Committee on the Transmission of Tuberculosis, stated that he had not yet secured sufficient data to make a report. He was, upon motion, granted further time.

Dr. Safford suggested that it should be ordered that all reports be ready for publication by the October meeting.

There was a discussion as to the proposed matter of legislation, after which the whole question was referred to the Committee on Epidemics, who were instructed to report it the morning.

The question of small-pox was then taken up.

Dr. P. D. Sims, of Chattanooga, gave a history of epidemics in that city, and the methods adopted by the Board to repress the disease.

The question on the management of small-pox and the points developed in discussion, were referred to the Committee on Epidemic Diseases.

The Board then adjourned until 10 o'clock A. M., January 3.

THE SANITARY COUNCIL OF THE MISSISSIPPI VALLEY.

This body, which by reason of the high official and personal character of its members has been a potent factor in sanitary matters, doubtless originated from suggestions urged by Dr. J. D. Plunket, while attending the Richmond meeting of the American Public Health Association.

Historically it dates from the action of this Board, as shown by Secretary Clark's report, pages 38-40.

At the annual meeting of the State Board of Health, held at Nashville on the 3d and 4th of April, 1879, a resolution was adopted as follows:

Whereas, There is an uneasiness felt among the people of the entire Mississippi valley, lest the approaching summer may witness another visitation of yellow fever in that region; and,

Whereas, The National Board of Health has not yet been clothed with sufficient authority to make its action available should an emergency arise; therefore, be it

Resolved, That this Board do invite a conference of representatives of all the State Boards of Health located in the Mississippi Valley, to be held in Memphis, April 30, 1879, for the purpose of counselling together and arranging a definite plan of co-operation, should events render it necessary to establish a system of quarantine.

Your Secretary sent out letters of invitation containing the above resolution to each of the following State Boards of Health:

Wisconsin, Iowa, Missouri, Michigan, Illinois, Minnesota, Colorado, Arkansas, Louisiana, Mississippi, Alabama, Ohio and Indiana.

Answers were received from all the Boards accepting the invitation, except Alabama and Colorado, but it appeared there were no State Boards in Ohio, Indiana, Iowa, Missouri, and Arkansas. Invitations were also extended to the Local Boards of New Orleans, Memphis and St. Louis, and to the Auxiliary Sanitary Association of New Orleans.

At the time stated your Secretary, in company with the President,

Dr. Plunket, repaired to the place of meeting, where they were met by a full and able representation from each of these organizations.

A copy of the proceedings of this meeting, together with the adjourned meeting at Atlanta, held on May 5-9, is hereby appended, and made a part of this report.

It is a matter of congratulation to the people of the Mississippi Valley that such an organization was effected, as by the co-operation of these Boards, and the adoption of plans of action, it will almost certainly serve to protect the Southern borders from such an epidemic as occurred in 1878. The gentlemen comprising this Council are men of great scientific attainments and sound philosophic principles, and the experience they have had in sanitary matters render them peculiarly fitted to subserve the interests of those people who are liable to the inroads of great and fatal epidemics. Although the National Board of Health has had its powers enlarged by Act of Congress since the organization of this Sanitary Council, they yet, co-operating with this Board in view of a possible emergency, would form a powerful lever to effect great good. Without a regular systematic plan of action by the National Board, aided by the counsel and experience of the Sanitary Council, its efforts to protect the Southern coast would be, to a certain extent experimental, while with their aid they will be able to enforce such measures as have been demonstrated as positive protections by the lights of experience. It is therefore a matter of prime importance that this Sanitary Council should maintain a perpetual existence as an advisory and auxiliary Board to the National and to the State Boards of Health. The address of welcome delivered by President Plunket met with a warm response, and his election to the position of President of the Sanitary Council of the Mississippi Valley, was a fit acknowledgment of his superior abilities and long service in the cause and to the State Board of Tennessee.

At the Atlanta meeting, May 5-7, this Board was represented by President Plunket and Dr. E. M. Wight; at the adjourned meeting in Nashville, November, 1879, by President Plunket and Dr. E. M. Wight; at the second annual meeting, St. Louis, April 21, 1880, by Dr. Plunket; at the called meeting in New Orleans, December 9, 1880, by Dr. Plunket and Secretary Clark; at the third annual meeting, April 21, 1881, at Evansville, by Dr. Plunket. The meeting of 1882 was held at Cairo, April 19-20, Dr. Thornton being the delegate. A special meeting took place

October 19, at Indianapolis, when Dr. Thornton and Secretary elect, Dr. Fite, attended. In 1883 the meeting took place in Jackson, Miss., April 3-4, Dr. Thornton attending. Memphis was the place of meeting, March 21, 1884, when Dr. Thornton and Secretary Fite represented the Board.

The address of welcome made by Dr. Plunket in 1879, at Memphis, explains fully the scope and work of the Sanitary Council of the Mississippi Valley. Specially does it bring out the great field for sanitation in the Mississippi Valley:

Less than one short year ago, upon this historic ground, there was enacted a tragedy which has no parallel in the annals of this country, and but few in the annals of mankind; a tragedy, the principal actor in which was the insatiate monster Death. Along these streets, and in these homes, the heavy shadows of his dark wings fell, sweeping often into one common grave whole families, from the grey-haired old man down to the little babe which nestled in the crib. The very atmosphere was thick with his poisonous shafts, and it seemed inevitable that Memphis, the beautiful and thriving city of the great valley, was doomed to witness the extinction of her every son and daughter. It was here that the wail of suffering and anguish went up from childless parents, parentless children, husbandless wives, and wifeless husbands, until it touched the great humane heart of Christendom, and the fountains of charity were opened up, and in a bold, steady stream flowed from every section, often coming in the form of a brave, philanthropic man, a fearless, devoted woman, or in limitless quantities of money or supplies to meet the wants of the suffering and sustain the strength of the well. It was here that heroes and heroines were born, it was here that they died. To prevent the re-enactment of such a heart-rending tragedy in the Mississippi Valley is within the power of a well ordered system of inter-State sanitary police, efficiently carried out. Wherefore, the representatives of the several States lying along the Mississippi and its tributaries, have been convened at this time for the purpose of taking counsel, the one of the other, and arranging so far as may be the details of such a system. Thoroughly

organized, we will be enabled to meet the foe at the very threshold, and by prompt, intelligent action there is every reason to expect his utter annihilation. These extreme outer posts are by preference our fields of battle, and it is here that the greatest victories must be won or lost. Through organization we can concentrate upon every such invaded outpost the greatest power, both State and National, and, in consequence, be enabled thereby to secure results which, in some measure, will reflect back to Europe the brilliant demonstration recently given the world of the capabilities of sanitary science when intelligence directs and ample means are supplied it. From geographical position this duty, as well as the responsibility, is ours to study with anxious care the influence upon public health of this great continental sewer, as it sweeps along through three thousand miles in its downward course to the sea.

It is upon its broad and ever widening bosom that the great carriers of commerce find ingress and egress, bringing into our country not only the wares of the world, but also the people of every race and nationality, with their idiosyncracies of mind and body, and often (that regarding which we, as guardians of the public health, are most concerned) the peculiar diseases of their native lands.

Also, it is for us to present measures which will prevent, not only the periodical overflows which occur almost every year, sowing the seeds of disease and death throughout this entire lower country, but measures which will go yet further, and through a comprehensive, skilfully planned system of drainage, will make dry the swamps and marshy places, and reclaim the millions of acres of valuable land which to-day remain more or less submerged in water, as they were left by the aborigines ages ago, giving off continually noxious gases, which in their effects are annually consigning thousands to premature graves, and at the same time placing the health of the whole people upon a lower plane than it would otherwise occupy, diminishing thereby their powers of resisting disease and enabling epidemics, as a consequence, to count their victims in greater numbers.

To examine such inter-State sanitation as is here feebly indicated, requires, from the organic structure of our system of government, a cordial co-operation of State with State, and all with the General Government; for, indeed, only can a work of such magnitude be undertaken and carried on to a successful termination by the National Government. It therefore is for us, through a definite plan of co-operation, first, severally and collectively, to gather such facts as may tend to elucidate this all-important subject; then let them be consolidated by the National Board of Health, and (accompanied by a clear, forcible argument) be presented to Congress, urging

the enactment of such laws as will authorize the Government to begin the work at the earliest day possible, and go forward uninterruptedly with it to the end. Then will be dispelled, and then only, this deadly malaria, which ever hangs, like a heavy cloud, over the entire Mississippi Valley, acting as a great clog to the energies of its inhabitants, and undermining the constitutions of all.

Thus cursorily have I indicated but one or two of the many subjects which will present themselves, in the progress of events, requiring concert of action between the several States here represented, and it is for us upon this occasion to adopt such rules as may be necessary looking to this end, combining in their structure simplicity with yet sufficient strength and latitude to comprehend any emergency.

I now welcome you to a labor which is pregnant with the future of hundreds of thousands of our people, and to the visitors in our midst, permit me, in behalf of the people of Tennessee, to extend to each and all a most cordial greeting.

Following up the above, at the quarterly meeting of the Tennessee State Board of Health, April 6, 1882, Dr. Plunket offered the following resolutions, which were unanimously adopted, all the members being present:

WHEREAS, The periodical overflows of the Mississippi river are not alone destructive to the material interests of that section, to the extent of millions annually, but are in a preeminent degree disastrous to the health and lives of the inhabitants of the great valley, generating continuously noxious gasses which, in effect, are annually consigning thousands to premature graves, and at the same time placing the health of the whole people upon a lower plane than it would otherwise occupy, diminishing thereby their powers of resisting disease, and enabling epidemics as a consequence, to count their victims in greater numbers; therefore, be it

Resolved, That the State Board of Health, of the State of Tennessee, do respectfully petition Congress and urge upon our Senators and Representatives in Congress to exhaust every means to secure the immediate inauguration by the General Government of plans which, when completed, shall for all coming time, effectually prevent the repetition of the sad experience of the past.

Resolved, That the Secretary be directed to transmit a copy of these resolutions to each of our Senators and Representatives in Congress also to each Board of Health in the Mississippi Valley.

THE AMERICAN PUBLIC HEALTH ASSOCIATION.

By request of the State Board of Health, President Plunket, Secretary Lindsley and Dr. T. A. Atchison attended the meeting held at Richmond, November 19-22, 1878. As directed, they used their best endeavors to get the next meeting at Nashville, and were successful.

At this meeting, November 18-21, 1879, all the members were present, and assisted greatly in making it an epoch in the history of the body. At New Orleans, December 7-10, 1880, President Atchison and Dr. Plunket participated in the proceedings. At Savannah, November 28, December 3, 1881, these gentlemen again represented the Board. At the Indianapolis meeting, October 17-20, 1882, Dr. Thornton and Secretary elect Fite were active. At Detroit, November 13-15, 1883, President Atchison, Drs. Thornton and Sims, and Secretary Fite were in attendance. The St. Louis meeting, October 14-18, 1884, was attended by Dr. Thornton and Secretary Lindsley.

Thus it will be seen that from its origin this Board has highly appreciated the efficient, though voluntary and gratuitous services rendered to the cause by the American Public Health Association.

STATE CORRESPONDENTS FOR THE FOUR YEARS ENDING JANUARY 1, 1885.

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ARRANGED ALPHABETICALLY BY COUNTIES.
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Anderson.—Hollinsworth, Dr. M., Clinton.

Bedford—Moody, Dr. G. W., Shelbyville; Whitthorne, B. R., Shelbyville.

Bladson.—Boonett, Dr. J. P., Pikeville.

Blount—Cunningham, Ben., Maryville; Gault, S. H., Louisville;
McTeer, W. A., Maryville.

Bradley—Long, Dr. G. A.; Scruggs, Dr. A. D.; Day, Dr. S. H.;
Bodet, Dr. W. P.; McNabb, Dr. A. Pres.; Brown, Dr. L. V.,
Secretary, Board of Health of Cleveland; Haley, Dr. L. B., Cleve-
land; Ramsey, John W., Cleveland

Campbell—Allen, William, Jacksboro.

Chester—Cook, Dr. J. A., Henderson.

Cannon—Miller, Dr. L. D., Bradyville

Carroll.—Hawkins, C., McKenzie; Humble, Dr. G. W., Hun-
gdon

Cheatham.—Freeman, J. M., Kingston Springs; Turner, T. A.,
Ashland.

Coffee.—Davidson, George W., Tullahoma; Marshall, W. A.,
Tullahoma.

Crockett.—Coop, Dr. W. A. H., Friendship; Hess, Dr. N. J.,
Gadsden; Partee, N., Bell's Depot; Williams, Dr. R. J., Gadsden.

Decker.—Curtiss, Dr. T. S., Cumberland Furnace.

Davidson.—Callender, Dr. J. H., Nashville; Cheatham, Dr. Rich-
ard, Health Officer of Nashville; Cook, Dr. W. C., County Health
Officer, Grizzard, Dr. R. W., Edgefield Junction; Harwell, Dr. J.,
Nashville; Jones and Allison, Local Inspectors; Lindsley, Dr.
J. L., Nashville; Lupton, Dr. N. T., Vanderbilt University; Maddin,
Dr. L., Nashville; Mitchell, Dr. Charles, Health Officer of
Nashville; Morrison, Dr. Ambrose; Roberts, Dr. D. J.; Stephens,

Dr. J. Bunyan; Bennett, Prof. H. S., Fisk University; Dake, [redacted] J. P., Nashville.

Decatur.—Jones, Dr. F. W., Decaturville; McMillan, Dr. W. [redacted] H., Decaturville.

DeKalb.—Mason, Dr. R. W., Smithville.

Dickson.—Culham, Dr. J. H., Charlotte; Lovell, Dr. C. [redacted] I. Dickson; McCreary, Dr. T. M., Dickson; Slayden, Dan., Dickson; Dunnagan, J. B., Charlotte.

Dyer.—Clark, Hon. C. P., President; Fowlkes, Dr. W. A., Phillips, Dr. J. W., Vernon, Dr. E. R., Seat, J. G., Thomas, Dr. B. [redacted] Board of Health of Dyersburg, Smith, Dr. J. H., Trimble, Summers, Dr. F., Dyersburg.

Fayette.—Jones, Dr. P. T., Somerville.

Franklin.—Sloan, Dr. F. B., Decherd.

Gibson.—Stillwell, Dr. W. H., Humboldt; Coldwell, S. W. Trenton; Wade, W. A., Milan, Buchanan, Dr. A. B., Rutherford, Hale, Dr. S. H., Milan, Happel, Dr. T. J., Tronton, Harrison, R., Milan, Henderson, Dr. J. A., Milan; McFarland, Dr. W. Humboldt; Philp, J. W., Humboldt; Scott, Dr. J. E. D., Humboldt.

Giles.—Abernathy, Dr. C. A., Pulaski; Gordon, Dr. D. C., Pulaski, Grady, G. D., Buford Station, Meadows, Dr. J. A., Bethe Moffitt, Dr. W. J., Bunker Hill.

Greene.—Cloyd, Dr. James W., Mosheim

Grundy.—Marks, E. C., Tracy City.

Hamblen.—Gregg, A. H., Morristown; Hover, Dr. S. P., Morristown, Howell, Dr. W. A., Morristown, Loop, Harvey, Morristown.

Hamilton.—Cate, W. T., Chattanooga; Haywood, Dr. H. B. Chattanooga; Driscoll, Dr. William, Chattanooga, Goulding, B. L. Chattanooga. *Chattanooga Board of Health* Hope, Dr. W. T. President; Baxter, Dr. G. A., Vice-President; Eaton, Dr. E. M. Secretary, Sims, Dr. P. D., Curtis, Dr. D. G., Evans, Hon. H. Clay Snyder, Chas. C.

Hardeman.—Patterson, H. I., Grand Junction; Irwin, J. [redacted] Grand Junction, Briggs, Dr. H., President, Prewett, Dr. T. E. Secretary, Board of Health, West, Dr. J. B., Grand Junction.

Hardin.—Barlow, Dr. J. K., Savannah; Hardin, Dr. R. A. Savannah, McDougal, Dr. Jas. T., Savannah; Welsh, Dr. T. J. Savannah; Martin, Dr. J. D., Savannah; Perfect, T. W., Sallillo.

Hawkins.—Hoffman, Dr. J. H., Stony Point.

Haywood.—Allen, Dr. John R., Brownsville; Sevier, Dr. John H., Brownsville; Taylor, Dr. W. W., Brownsville.

Henry.—Haynes, J. H., Parker's Landing.

Hickman.—Bates, J. A., Centreville; Thompson, E. G., Centreville; Thompson, Dr. J. L., Centreville.

Houston.—Nichols, Dr. T. W., President; Buquo, Dr. H. H., Edwards, Dr. J. S., Ryan, Dr. M., Broaddus, J. W., Esq., Partridge, Ed., Esq., Rauschen, George E., Esq., Board of Health of Erin.

Humphreys.—Gould, Dr. H. F., Johnsonville; Thomas, Hon. D. B., Johnsonville.

Jackson.—Butler, T. H., Gainesboro.

Jefferson.—Coile, Dr. H. P., Secretary, Dandridge; Thornburgh, Dr., President; Anderson, R. J., Esq.; Cochran, Col. W. B., Dick, M. L., Esq., Board of Health; Hood, Dr. S. P., Mossy Creek; Moffett, Dr. W. H., New Market; Pierce, E. A., New Market.

Johnson.—Murphey, Dr. H. P., Taylorsville.

Knox.—Boyd, Dr. S. B., Knoxville; Campbell, Dr. A. J., Knoxville; Deaderick, Dr. C., Knoxville; Tadlock, Dr. A. B., Knoxville; Western, Dr. T. A., Church Grove; Zachary, Dr. B. M., Twinville.

Lauderdale.—Hanks, H. T., Ripley.

Lincoln.—McGuire, Dr. C. B., Fayetteville.

Loudon.—Beals, Dr. Frank, Maryanton; Browder, Dr. D. N., Philadelphia.

McMinn.—Cobleigh, Dr. E. A., Athens; McReynolds, Dr. H. L., Mouse Creek.

McNairy.—Boony, Dr. Dan., Purdy.

Madison.—Stark, John, Jackson; Taylor, Dr. John I.; Jackson.

Marshall.—Williams, Dr. J., Holt's Corner.

Maury.—Harlan, Dr. B. J., Columbia.

Montgomery.—Carney, Dr. N. L., Clarksville. *Board of Health of Clarksville:* Herring, Dr. B. N., President; Beaumont, Dr. C. W., Health Officer; Faxon, John W., Secretary; Crusman, J. J., Mayor.

Morgan.—Kemp, Dr. Charles P., Rugby.

Monroe.—Scruggs, Dr. R. F., Sweetwater.

Obion.—Bell, Dr. M., Union City; Brice, Dr. W., Troy; Evans, Dr. S. T., Union City; Scott, W. S., Troy; Turner, T. H., Troy; Warfield, Dr. A. P., Union City; Weddington, Dr., Troy.

Overton.—Trewitt, Dr., Livingston.

Perry.—Bone, Dr. J. L., Lobelville; Pickard, P. P., Linden.

Putnam.—Isbell, W. J., Cookeville.

Robertson.—Holman, J. I., Springfield.

Roane.—Jackson, J. D., Webster; Stewart, W., Rockwood.

Rutherford.—Enloe, A., Smyrna; Manson, Dr. J. E., Murfreesboro; Murfree, Dr. J. B., Murfreesboro; Johns, W. R., Jefferson.

Sevier.—Hammer, Dr. J. M., Sevierville; Walker, P. E., Sevierville.

Shelby.—Cannon, Dr. Calhoun, Memphis; Graves, Dr. G. S., Memphis; Johnson, Hon. John, Memphis, King, Dr. R. B., Memphis, Maury, Dr. R. B., Memphis; Purnell, Dr. J. H., Memphis; Randolph, William M., Memphis; Slater, O. L., Collierville.

Smith. Johnson, R. E., Grant; Waters, Dr. G. H., Grant; Apple, J. C., Carthage.

Stewart. Scott, W. B., Cumberland City.

Sullivan.—*Board of Health of Bristol*: Dickey, Dr. J. A., McCroskey, W. D., Pite, George C.

Sumner.—Foster, John B., Gallatin; Franklin, Ed. N., Gallatin; Tompkins, Dr. W. R., Gallatin; Gloster, Mrs. A. W., Gallatin.

Tipton.—White, W. N., Covington.

Washington.—Shipley, E. A., Jonesboro

Weakly.—Sebastine, C. W., Dresden; Winston, R. R., Dresden; Stephens, Dr. J. R., Ralston.

White.—Marchbanks, C., Sparta; Snodgrass, Dr. J. H., Sparta

Williamson.—Bostick, R. L. C., Franklin; Cook, H. H., Franklin; Hanner, Dr. Jas. P., Franklin, Jordan, Dr. G. M., Triune.

Wilson.—Britton, Abe, Lebanon; Gause, S. S., Lebanon, Richmond, J. P., Lebanon, Storry, Albert A., Lebanon, Blair, Hugh A., Lebanon. *Board of Health of Lebanon*: Beard, E. F., Mayor, President *ex-officio*, White, Dr. R. L. C., Secretary, Fite, Dr. J. L., Health Officer; Robinson, Dr. G. L., Anderson, Dr. J. M.

REPORT OF COMMITTEE
ON
SCHOOL HYGIENE IN TENNESSEE.

BY
DANIEL F. WRIGHT, M.D.,

OF CLARKSVILLE, TENN.,

MEMBER OF STATE BOARD OF HEALTH AND CHAIR-
MAN OF ITS COMMITTEE ON THE SUBJECT.



SCHOOL HYGIENE.

For good or for evil, the constitution of most persons is determined for life by the events within the average child's school days, say between the seventh and fourteenth year of life, or, to speak physiologically, between the second teething and the age of puberty. Prior to this period, especially up to the fifth year, the child has a struggle for life or death, with maladies affecting chiefly the digestive organs; but by the time indicated, he has either succumbed to these or survived them with but little permanent effect on his constitution, unless some special impression has been made through them on his nervous system; but from this time on to that of adult life, the nervous system is that which, for good or for evil, is most liable to be affected by the events of what may be called the scholastic period of life.

I find this critical and interesting period of life to have been less thoroughly treated by systematic medical writers than any other. Text-books on the diseases of children are generally based upon observations made in child-hospitals, which are almost entirely occupied by patients under five years old, and, by these works, little has been added to our knowledge since the publication of the great classic of Barthez and Rilliet, which has been the foundation of all the pædiatric literature of more recent times, and the experience of those eminent men was acquired in the *Hopital des Enfants Trouves*, of Paris, where the fifth year is seldom reached.

DISEASES OF THE SCHOLASTIC PERIOD.

For this reason I think it necessary to prefix to this report some observations on the morbid tendencies of the

school age. In doing so, I have to apologize to the learned and scientific gentlemen of the State Board of Health for appearing to instruct them on what they are, doubtlessly, as well, if not better, informed than myself, begging them to remember that this report, while primarily addressed to them, is intended mainly to influence a class not versed in medical science, viz.: Teachers, superintendents, boards of education, and, if possible, the parents of children at school. The same consideration will account for the avoidance, so far as possible, of technical words, and the taking for granted facts which must be known to educated medical men, and have to be received without demonstration by the non-professional. This inquiry, then, will be specially directed to that period of life which extends from the seventh to the fourteenth year, or thereabouts, to those disorders to which children of that age are specially liable and to the moral and physical treatment which is likely to aggravate or abate such liability.

I maintain, then, that the special tendency of the constitution, during the period in question, is to diseases of the nervous system, and that ill-judged school discipline is calculated so far to promote such disorders as frequently to impress on the constitution lesions which appear in multifarious forms in after life, and which, when they fall short of disease, leave behind them moral and intellectual infirmities, generally attributed to original defects of character, but really attributable to thoughtless mismanagement during education.

EPILEPSY.

As this is a view not often put forward, it is proper to strengthen it by established pathological facts relating to the occurrence of various diseases during the period in question, the relation, in short, of these diseases to the first and second teething, and to puberty. Take epilepsy, for example. This disease, when it occurs in childhood at all, is observed most frequently to make its first appearance at the

period of the second teething, though when it does so, it is generally found on enquiry that convulsions have attended the first teething, perhaps repeated occasionally in the interval, but renewed with characteristic force at the second dentition. Where this is the history, our best practitioners have learned to recognize in the first infantile convulsions the manifestation of the original vice in the nervous organization, which, in after life, constitutes epilepsy proper, and the interval between second teething and puberty is watched with the gravest anxiety, for if the convulsions are repeated after the permanent teeth are fully developed, and especially if they are aggravated in intensity and frequency at the pubescent period, confirmed epilepsy is feared as the destiny of the patient for life.

CHOREA.

Chorea is emphatically a disease of what we have designated as the scholastic period of life. It is true that it may occur as early as the second year, but rarely before the seventh, and as rarely does it persist beyond the period when the sexual functions are fully developed. At that period, if not followed by partial paralysis, which does not often happen, it is very liable to be replaced by hysteria in females, and rheumatism in both sexes.

ASTHMA.

Asthma in the young is a nervous disease, affecting specially the pneumogastric system, i. e., the nerves of the heart, lungs and stomach; it very generally terminates in full recovery at the completion of pubescence, when the last medicine given gets the credit of the cure, especially if it be a quack nostrum.

Not to prolong this list too much, it may be mentioned that the minor disorders of the nervous system, such as squinting, near-sightedness, stammering, etc., if acquired at all, are almost always established during the scholastic age; indeed, it has been noticed that the last two infirmities are almost exclusively incidental to educated people, as

is the first also (squinting), when it is an acquired disease, independent of structural lesions.

SCOPE OF THIS REPORT.

Apologizing for the length of this disquisition on the neuroses of early life, I will now state my motive in treating of them at such length:

In most treatises and reports on school hygiene, the body of the statements refers to the site and dimensions of school-houses, with the provisions for heating, lighting, ventilation, etc., and the drainage and sewerage of the lots on which they are built. I am far from underrating the importance of all these things, but, important as they are, there are others of equal, if not of paramount, importance. I speak of the actual procedure in the school-room as affecting the nervous system of children.

Surely, if the special tendency of the scholastic period of life is to nervous disorders, as I have endeavored to show, if the brain and nerves are more rapidly developed than any other organs during that period, and more susceptible to both benignant and malignant influences from external causes, the effects of school methods of teaching and discipline, of the hours of school work and recreation, and all matters, in short, affecting this delicate and complicated department of the human organization, must have an importance paramount to all other considerations of school hygiene.

Sensation and motion, intellectual and emotional action, are the functions of the brain and nerves, and are also the *media* through which these receive benefit or injury; and all these are specially dealt with in school life. Not that these are the only things which the nervous system has to do, or which affects its well-being. Respiration, digestion and nutrition requiring good air, good water, and good food, are all influenced by the nerves, and exercise a reciprocal influence upon them; but these latter will be treated of by themselves, and the various arrangements of school

life will now be considered as influencing the former group of functions.

SCHOOL HOURS.

The amount of bodily or mental exertion which can be endured in a day is limited at all ages, but much more so during youth than at any other period, and the earlier the stage of youth, the narrower the limit. There is a double reason for this, the brain and nerves are less developed at that age, and they have more to do; they have to promote and regulate the developments of the rest of the body, a process which, in adult life, is completed. Hence, the capacity for exertion being different at different ages, the work must be apportioned accordingly. The following estimates have been given, as to the length of time which can healthfully be assigned *per diem* to study and recitations at different ages :

AGE IN YEARS.	HOURS FOR STUDY AND RECITATION.
Below seven,	2½ to 3.
Seven to ten,	3 to 3½.
Ten to twelve,	4.
Twelve to seventeen,	5 to 6.

School directors of Tennessee will look upon this schedule with surprise, and an instinctive spirit of resistance, and, indeed, each of the items in it will require separate consideration, but before this detailed examination, we must discuss the much controverted question of *the single or double session*. It is evident that this question depends for its solution partly upon local considerations. In the country where the population is sparse, and many of the pupils travel several miles to reach the school-house, it is clear that there is no choice; the children must be taught all they can learn in a limited time and sent home. But in cities where they are all on the spot, the question requires much consideration. It is certain that the brain will bear more work without injury when the hours of study are separated by a considerable interval of recreation, than

when they proceed uninterruptedly, or with brief interruptions. I am satisfied that, at least in summer time, while the days are long enough, a session of three hours in the morning, and two in the afternoon, with an interval of at least two hours between the two, will produce more brain work with less exhaustion of the brain than can be crowded without injury, into the space of a single session. I know that I shall here have the opposition of teachers, who like to get their work done as soon as possible, and to go home. I believe that even for them the longer interval of rest is better, but of this they prefer to judge for themselves. Whatever may be the case with them, however, the longer interval of rest is a very great desideratum for the half developed brains of their pupils. But this question is affected by so many local considerations in different parts of the country, that it must be left to the local school authorities. I will only say that, where it can be had, the double session is, in my opinion, the best for the scholars, though it will always be opposed by teachers; school boards must decide.

I will now return to the schedule given in page 207, and discuss it item by item.

To discuss the first step, then, take the children under seven. As the school age in Tennessee commences at six, we cannot neglect the consideration of this class, though I consider it a misfortune that children are at school at all at such an age, the right school for them being around the mother's knee. But we have to discuss things as they are, not as we could wish them to be.

The length of time for study and recitation assigned to such children is from two and a half to three hours a day, which, if it errs at all, does so on the side of excess. I doubt whether more than two hours can be profitably so employed at that age. A large portion of such brains is not organized as brain at all, but is merely the unformed material of brain; to require any continuous labor from

such is as inhuman as was the labor required of little children in factories, until the law stepped in and peremptorily forbade it. I do not mean that the child is not to be at school longer than that, but its school-work should be interspersed with frequent recess, and, while it is at work, as little as possible should be done at the desk, and as much as possible at the blackboard or in class. Many things can be taught even while the body is in motion. I have heard the multiplication table chanted in a simple rythm while the class marched around keeping time to the chanting, and thus converting work into play.

But not only should the interchange of work and play—brain-work and muscle-work—be frequent; even the school-work, while they are engaged in it, should be constantly varied; thus the change from arithmetic to reading, thence to writing, and especially to singing, should be frequent. The same authority from whom I have compiled the above schedule, contends that children under seven years of age should never be engaged on any one subject more than fifteen minutes at a time, and increases this time gradually with the advance in age up to that of sixteen years, when thirty minutes may be given to one subject. This is on the now well-established principle that change of labor is rest. Thus, a person tired of riding, can yet walk a considerable distance without further fatigue and *vice versa*, and even in the intellectual labor of adult life, a person who has pursued scientific or professional studies till tired out, will find, not additional fatigue, but refreshment, in turning to some pleasing department of general literature. For the effective varying of school-work, especially that of little children, there are two exercises that cannot be over-estimated; they are vocal music and calisthenics, both of which I have heard spoken of with great contempt by parents. Let such parents go into the preparatory department of a public school when the children have been wearied with application, heads drooping, eyes dull and half-closed, limbs hanging listlessly, and let

the tap of the bell summon them to their feet for a spirited song or a brisk exercise in rhythmic motion, and see the change of expression, as magic as that of shadows to sunshine, and I think there will be some converts to the benefit of music and calisthenics. These exercises have a value for the respiratory as well as the nervous system; they not only relieve tension of the nerves when wearied by continued and monotonous mind-work, but they cause at least double the amount of air to pass through the lungs as compared with the breathing during study.

In estimating the merits of a teacher of little children, I place before all other *criteria* the question, "Are the children happy under her teaching?" Children have a right to happiness; it is indispensable to them; they are not duly developed in body, mind or morals without it, and, at the age I am speaking of, it would be infinitely better for them to do without education at all than to pass a miserable childhood in attaining to it.

Having devoted so much space and time to the first years of education, I need not go into much detail in treating of the more advanced stages of it. Suffice it to say that the principles I have laid down may be gradually modified as the children grow older; the hours of study may be longer, recess less frequent, and continuous application to one study more protracted, within the limits above laid down.

But I must express my dissent from one part of the schedule, or at least from an inference to which it naturally leads.

It is the direct impression produced by that schedule that the length of study hours and the burden of intellectual labor generally may be progressively increased from the age of twelve to that of seventeen; to this I demur. I believe that a healthy boy of twelve or thirteen, and a healthy girl of eleven or twelve can stand more brain-work than the same boy at fifteen or the same girl at fourteen.

AGE OF PUBERTY.

The age of puberty requires as careful and considerate school treatment as that of early childhood, on which I have dwelt at such length. The nervous system has much to do at that period outside of school-work, and much evil arises from pushing it with extra studies. At that age a more rapid bodily development takes place than at any other subsequent to infancy, and, moreover, the sexual system, hitherto dormant, comes into activity; all this occasions a vast expenditure of nerve force, and, if this be diverted from its proper office and applied to laborious and long continued study, great exhaustion results without the due fulfillment of either function. I am speaking especially of the female constitution, though not exclusively of that; but so enormous is the evil done by exorbitant demands on the girl's mental faculties; so many are prevented from attaining a womanhood competent for its onerous duties; so many promising girls have dwindled into feeble, helpless women, incapable of either happiness or usefulness in married life, that it would be an indefensible default on my part, in the duty I have undertaken, if I were to use inadequate or even measured language on the subject; words too strong cannot be applied to it. In every school attended by girls there ought to be a prudent and experienced lady, married if possible, or one who has been married, to whom each girl, as she approaches the age of puberty, should be required to report once a month—not merely allowed but required—and it should be the duty of this lady to report to the superintendent at every menstrual period that such girl is under the rules. Nothing but this need be stated to any one, except to the lady in question. She is simply under the rules; and these rules should be as follows: [I quote from an excellent treatise in Buck's encyclopedic work on Hygiene, by D. F. Lincoln, M.D.] "Each scholar, on thus notifying her matron, is excused from going to the black-board to stand for work; from standing in recitations;

from going up and down stairs to recite in special studies, and especially from going down stairs to work in the chemical laboratory." It is added that school-houses attended by girls should not be built of more than two stories if it can be avoided. That is well for general rules; but, in addition to this, much individual vigilance is demanded; headache, a feverish flush, a tendency to fainting, should be instantly noticed, and the pupil excused from work for that day. There are writers who go so far (and I doubt whether it is too far), as to advise that every girl, at the commencement of each menstrual period, should be excused from attendance at school at all.

I am not blind to the many objections which will be raised to these proposals; objections against the resulting irregularity, and interruption of systematic instruction; objections against the door opened to malingering, for the purpose of idleness; and, finally, objections regarding the remarks which would be made by the pupils of the other sex upon these periodic exemptions. I foresee them all, and acknowledge that I am unprepared to meet and obviate them. But if they cannot be obviated, does not the whole subject suggest very serious considerations as to the expediency of mixed schools? I have no doubt of their advantage for pupils of both sexes up to twelve years of age, but I have had growing misgivings for some time as to the co-education of the sexes after this period. The physical treatment required at this critical time of life is so different that I doubt whether it can be successfully carried out with due regard to the well-being of both. I am here directly opposed to the present tendency of public opinion, but I apprehend my duty in my present position to be that of influencing public opinion, if possible, rather than of being influenced by it.

But, though I have dwelt at such length on the care necessary for the management especially of girls at puberty, it must not be supposed that boys need no special treatment at the same age. On the contrary, they require very care-

ful vigilance at that age, only less in degree than that demanded for the other sex. To note only the visible bodily increase, everybody knows that most boys begin to grow very rapidly at fourteen, or thereabout, and, to speak roughly, a boy who is growing at the rate of six inches a year, has as much as he can do to do that. But the visible increase in size is a small matter, compared with other changes going on in the pubescent boy; an entire new class of sensations, thoughts and emotions arise within him, and an entire new department of the human organization, the reproductive system, is developed in him. Each of these changes implies a vast expenditure of nervous force, leaving but little to spare for severe school exercises. I suppose that there is no teacher of experience who cannot mention numerous cases of boys who were good scholars up to fourteen years old, bright and industrious, becoming suddenly listless and sluggish in their exercises, even stupid, and totally destitute of energy. The average teacher, who can see nothing beyond his weekly reports, now considers that he has to deal with sudden perversity, and he puts the spurs to his supposed refractory scholars; perhaps it is the rod, or he may try to shame them into emulation, by showing that younger boys are outstripping them, or, worse still, he may try to goad them with sarcastic and contemptuous taunts—and all in vain. Either the boy meets it all with stubborn resistance (which for his physique is the best thing he can do), or he is spurred into futile and painful efforts; then come headaches, or he has to go home with a low fever, and then the drains and sewers are examined for a cause, while the real evil is the injudicious forcing of a brain and nerves, inadequate for the time to the burden imposed upon them.

I admit that the teacher is here in a perplexing dilemma. Continued progress is expected by the parents, but progress is refused by the scholar; or, if progress is attempted, a general breaking down is the result, and the teacher is

blamed either way. The right advice to be given in such cases is not to the teacher, but to the parents. Take the boy away from school—he can do no good there—put him to some business not too sedentary, such as book-keeping (unless he has collecting to do with it); or set him to light work on a farm, or give him any occupation in which moderate brain-work is alternated with muscular exertion. Do this, and in two years, if you still desire further schooling for him, you will find he has a better appreciation of the value of it, and also mental and bodily faculties better able to stand the labor of it.

STIMULUS.

Stimulus, in some form, is an indispensable agency in school work, and it is still a matter of controversy what form the stimulus should assume. I find myself here placed in the dilemma either of neglecting a most important element of mischief to the nervous system of the scholar, or of seeming to encroach upon the functions of the teacher, by discussing subjects belonging exclusively to his department. Being compelled to choose, I select the former horn of the dilemma, and, if teachers protest, I can only tell them that, while mind and body act and react on one another so constantly and intensely as they do, neither the teacher can safely neglect the effects of his procedure on the bodily frame, nor the hygienist the methods of discipline, which so seriously affect the nervous system of those in whose interest he writes.

Fifty years ago, neither the average teacher nor the average scholar contemplated any other stimulus for the sluggish and the refractory than the rod. In the present day, we seem to be arriving at a nearly unanimous opinion in condemnation of it. I am not in full accord with either school, but I cannot discuss the question fully here; I am restricted to the hygienic points of view.

The methods, then, by which pupils are stimulated to exertion in public schools may be classed under four heads,

which must be passed briefly in review, viz.: corporal punishment, keeping in, emulation or competition, and expulsion or suspension.

Concerning the last we have nothing to say, as it removes the pupil at once from the influence of both school discipline and school hygiene; all the others must be looked upon as measures for avoiding this fatal expedient for the treatment of refractory scholars. When it does occur, I suppose all are agreed in looking upon it as a calamity visited upon the pupil, the teacher, and the school at large.

CORPORAL PUNISHMENT.

I am disposed to concede this much to the spirit of the age, that, *prima facie*, he is the best teacher who is able to get along with the least amount of whipping, without the sacrifice of order or progress; but, presuming that it ought always to be reserved for cases of direct defiance of school authority, I must say that, from the hygienic point of view, it is immeasurably preferable to its customary substitute, "keeping in." This latter aggravates all the evils I have hitherto specified as inherent in the public school system. Morally, intellectually and physically, the confined pupil is under depressing circumstances; he is sulky, weary, stupefied and rebellious, for confinement does not really subdue the spirit of defiance, which intensifies under the compression it suffers. On the other hand, a smart switching gives no time for brooding; it does not interfere with the necessary hours of exercise and recreation, which I have already claimed as inviolable on hygienic principles, and it stops rebellion at once, with all the heart-burnings attendant upon a protracted struggle of will against will; the very tingling of the cuticle sends him off to his play with a healthy stimulus. As for the chivalric bosh about degradation, I pass it over as being outside of the hygienic points of view.

EMULATION AND COMPETITION.

Setting aside, then, the method by keeping in as totally condemned on hygienic grounds, for both teacher and pupil, we come to the excitement of conflicting ambitions as a motive power in schools. There can be no doubt of this being a very potent stimulus, indeed, so potent as to be dangerous in some, while in others it is totally inoperative. Among the older girls, especially, the intensity of emulation often amounts to a passion, under the stress of which all sanitary precautions are swept away, not by the urgency of the teacher, but by the eagerness of the pupil. Vehement excitement, with alternate elevation and depression of spirit, exaltation and irritation, in rapid succession, are incessantly harrassing the brain and nerves with an excitement, the effects of which do not cease after school hours are over, but continue through times of recreation, and even disturb the hours of sleep. Here, I believe, is the most fertile source of nervous disorder. It specially attacks the brightest and best; it is not a defect of inferior schools, but an excess of the best of those in which the largest amount of work and the most rapid progress is achieved.

THE SCHOOL MACHINE WORRY.

But there is another mode of competition which affects those rather lower down in the scale, and some of them more profoundly, perhaps, than the class above described; at least a larger number are brought under its influence. I speak of the incessant push to keep scholars up with the studies of their grades, which they have to do under penalty of falling to a lower grade. This peculiar stimulus takes effect upon a larger number than any other, and is, in fact, the chief motor-power which keeps the whole in motion. It differs from that previously described in this, that the exciting motive in the one is the hope of getting ahead, in the other the fear of falling behind—of losing grade, in short. Now, hope is an elevating agency, fear a depressing one. Here comes in that peculiar state of mind, now thoroughly

recognized by nervous pathologists, called by them worry. It was first used, I believe, by Forbes Winslow, in reference to numerous cases of *dementia* occurring among business men. It was shown that, in most such cases, it was not over-exertion that produced insanity, or at least not that alone, but excessive labor under depressing circumstances—over-work, with fear and despair in the back-ground. Thus, while business is prosperous, a healthy man can get through an astonishing amount of work without injury, but let the affairs become involved with daily increasing complications ominous of failure, and let the business increase its exactions on the overwrought brain, while hope gives way to foreboding and foreboding to dread and dread to despair—then the harassed brain gives way under the double burden of work and despondency, and our lunatic asylums are full of *worry* so produced. *Worry*, then, is the prevailing trouble of large schools in which the machine is worked with vigor and energy characteristic of the modern public school system. A boy finds himself literally part of a great machine there, a single cog of a single wheel, perhaps, but the machine works on and he must work with it or be crushed by it; he feels that he must keep up with the machine and make his grade, and he feels every day less able to do so; failure implies disgrace, loss of self-respect and self-confidence, grieved and, perhaps, angry parents, the jeers of school-fellows; he redoubles his efforts and goes home with headache—ultimately sickness compels him to desist, he loses days, perhaps weeks, and finally the grade. Fortunate is he if no more permanent injury is done to a nervous system subject to such tension. Added to all these mortifications is an undefined sense of injury; he feels that he is not less intelligent than those who trample him down in the race, he can't tell why; and he is right, for it is not the stupid and naturally defective alone who fail under this trial; frequently the beaten scholar has a better mind than he who walks over him. At the risk of prolixity, I must here distinguish two types of youthful intellect, not sufficiently discriminated

between in school practice—they are the perceptive and reflective types. The perceptive boy catches an idea quickly, retains it well, and applies it promptly; he is bright and active in school and at play; the machine works well with him, and his advance is rapid; his teacher makes a brag scholar of him—but his is not the best mind there. The reflective boy does not take it in so quickly, from the very fact that as the seed falls in deeper soil it takes it longer to sprout; his quicker rival sees a thing at once, if he sees it at all; the reflective boy has to reason it out, and this takes time; the machine cannot stop for all this; he is passed over, and, as this takes place frequently, he is gradually recognized as the stupid boy of the class. The effect on the boy himself depends upon his nervous organization; if it is sensitive and irritable, he wears himself out with futile efforts to keep up; if it is less impressible, he gradually subsides with a sullen contentedness into the stupid boy's place, falling grade after grade, until his friends conclude his case to be hopeless, and put him at some work they hope he can do. But stupid boys of this sort have become some of our greatest men. Sir Isaac Newton, Sir Walter Scott, and hosts of other men, illustrious for intellect, were recognized as stupid boys at school, and the phenomenon has been often stated and wondered at, that, in so many cases, stupid school boys have become men of vast intellectual power. The solution is that, not they but their teachers were stupid in not recognizing a type of intellect which required other than machine methods for its development.

But it is not with those who have survived the blunders of their school treatment and become great men that I am now concerned. It is those who have more excitable nerves and a less stalwart frame, whose nerves have been torn to pieces by the inexorable working of the machine, and whose spirit it cowed by repeated failure, that are the victims of the machine. I am not writing from theory, but from observation. I have not only been engaged in education

myself in early life, but I have been for several years a member of the Board of Education, in Clarksville, where the public schools are among the best in Tennessee, and the system of instruction includes all the modern improvements. As a part of the duties of that office, I have practiced a constant inspection of the schools while at work, and familiarized myself with the methods of teaching and discipline and their results.

And what are these results? Alas! I cannot give statistics for them, for such results have never been tabulated, and cannot be tabulated; they are read in their effects in after life, producing helpless, hysterical women, and feeble, irritable men, producing neuralgia, and, as their extreme results, epilepsy, insanity and idiocy. I am conscious that this will be looked upon as exaggeration, and I have no remedy for that impression, though I am certain that it is within the truth. One fact, however, I can state: In the grammar department of the schools I have mentioned, consisting of a number of scholars varying from 120 to over 200, five cases of chorea occurred during the session which closed last June. The cases yielded readily to treatment while the patients were removed from the school, but the malady always returned if they returned to their desks. Now, it will be said that five cases out of two hundred scholars is not a very serious amount of disease, but I take it as a test of the tendencies of the school system. M. Rutz, in the French Dictionary of Medicine, finds 189 cases of chorea out of 32,976 children admitted to the children's hospital of Paris; this is an average of one and one-tenth per cent. on the whole number of sick children, while the school in question gives an average of two and a half per cent. out of all sorts—sick and well. Granted, then, that our five cases out of two hundred is not a very serious matter (though the parents of these five probably think otherwise), the occurrence of these cases is a test phenomenon which makes it certain that a vast amount of nervous

trouble must prevail there of a less grave and conspicuous character.

[The body of this report was necessarily written before reports could be received from other schools in Tennessee, which will account for our observations being limited to the schools of one moderate size town. These schools are admitted, however, to be among the best regulated in the State.]

I cannot dismiss this portion of my subject without calling attention to the effects of this storm and stress in our school system upon the teachers as well as the scholars. Let it be remembered that almost all the teachers in our public schools, except the superintendents, are now females. I believe it will be found that a truly healthy person among them is the exception, rather than the rule ; at least if the observation is made in June, toward the close of the session's work. Nor can it be considered an accidental coincidence that, in this State, an ex-State superintendent and the existing superintendent of the largest city schools in the State are palsied men.

I fear that boards of education limit their idea of their duty too much to the one purpose of getting the largest amount of work out of their employes at the lowest possible price. So narrow a method as this defeats its own purpose ; a system which thus squanders the health and energy of teachers can never be advantageous to the pupils ; the self-possession and tranquility of mind which are essential to the qualification of a good teacher are entirely incompatible with the harrassed and exhausted nervous systems which are the inevitable consequence of our machine system of education. Exhausted nerves are irritable nerves, and irritability is the worst defect a teacher can have. Let our school directors, therefore, reflect that a hard bargain with their teachers is a still harder bargain with their children.

THE REMEDY.

But readers will, long ere this, have begun to propound the question, what is your remedy? What do you want

done? Such questions are always very difficult to answer, and in this case a complete remedy would be tantamount to a revolution in our public school system ; for the errors out of which all these evils spring may be comprised under two heads :

First—Not enough teachers for the number of scholars.

Second—Too much teaching crowded into too short a time.

1. Children cannot be taught in great masses except by general rules ; in other words, by machine methods. What we have been endeavoring to show is that the evils in our methods arise from a want of discrimination ; what answers for a majority crushes a minority ; discrimination is needed between boys and girls, after a certain age, and between boys of a different mental type. But a teacher who has from fifty to seventy-five scholars to teach cannot discriminate, and, in our very best schools, many have at times more on their hands than that. One teacher to fifty-six scholars seems to be the proportion agreed upon for public schools, North and South, and I have not the least doubt that one in forty would furnish as much as one teacher could attend to, with good results to both teacher and pupil. But can this be furnished? Not under existing arrangements, without larger appropriations, and I have practical knowledge of the difficulty of getting city and county authorities to consent even to the existing school taxes. I fear it will be many years before an increase will obtain consideration.

I can only point out the evil, therefore ; to suggest the remedy would be to overhaul the whole fabric of our existing school system, which would be out of place in the present reports.

STIMULUS OF SYMPATHY.

There is still another mode of stimulating the youthful intellect, which must be dwelt on very briefly, as it is a method for Utopia, rather than one to be hoped for in Tennessee. Once in a generation, perhaps, an educator is

granted to us who is at once possessed and penetrated with the genius of teaching, and capable, by the magic of his manner, of communicating his enthusiasm to his pupils, a man of rare penetration into diversities of character, a man loving his scholars, and capable of exciting their love, and in these rare instances, we see in truth that,

“The labor we delight in physics pain.”

But such a man combines in himself the qualities of an angel, a philosopher and a consummate statesman—a combination not often attainable at the rate of \$400 a year, the average salary of teachers, as I am informed, in Tennessee; and even if the ideal teacher should be found, I fear it would require ideal pupils to be duly influenced by him.

EXERCISE—GYMNASTICS.

The average boy needs no instruction as to exercise, provided he is allowed “ample scope and verge enough.” He knows the demands of his body in that respect better than any one can tell him, and needs no incentive towards fulfilling them; so that, supposing the case of a boys’ school in the country, with the woods near enough and a sufficiently liberal recess provided for him, he may well be left to himself uninstructed. But the average boy is not the only person to be considered, nor are the schools most in need of sanitary instruction situated in the country. What I shall have to say on this subject refers, therefore, to large schools in cities, with pupils of all ages and of both sexes.

In most such schools, unfortunately, the play-ground is very small, and in some there is none at all. In the latter case, the establishment ought to be condemned without compromise, unless the recess is long enough to admit of the pupils going home and returning to an afternoon session; but this brings up again the controversy of the single or double session, which is a question that will not rest, let teachers do what they will to suppress it. There is an “irrepressible conflict” involved in it.

I take up the case, then, of city schools, which have some modicum of play-ground. Where sanitary principles are duly regarded, a gymnasium will be deemed an essential appendage of such schools; or rather two gymnasia, one for boys and another for girls, unless the recess for the two sexes can be arranged for different hours, and that would imply the separation of the sexes after early childhood is past, a measure I have already advocated as highly expedient. This also is opposed to the public opinion of the present day. But a gymnasium in which pupils were simply *permitted* to exercise at pleasure, would go very little way towards meeting the exigency; the pupils who need it most would never exercise at all, and those who did, would probably injure themselves by excess. A gymnasium for school purposes requires a leader of exercises, who should fulfill the functions of the old Greek gymnasiarch; he should conduct the exercises, and judge what exercises are suitable and healthful for the several scholars.

All this is far in advance of the public opinion of the present; it may possibly become a feature in the public schools of the future; for the present, perhaps, military drill may be suggested as an exercise for the recess in city schools.

For the little children, a teacher, skilled in the methods of the *kindergarten*, would be the best directress of the recess exercises.

INFECTIOUS DISEASES.

The laws of Tennessee already forbid the attendance of children suffering under infectious diseases at public schools; it was probably by an oversight that they failed to require vaccination as a condition of attendance in all cases where the child had not had small-pox or variola. This Board would, I respectfully submit, do well to urge the addition of such a provision; many of our city schools have a municipal ordinance to that effect, and I have seen it work well beyond the limits of the school, when enforced, by calling

general attention to the matter, and so bringing about general vaccination throughout a community.

But there is a class of diseases not properly speaking infectious, the spreading of which should be provided against in schools; they are not propagated by infection, but by imitation. These are the nervous affections, epilepsy, chorea and hysteria. Where any one of these occurs, the patient ought to be instantly removed from the sight of the other pupils, or the same disease will be very likely excited in some of them.

Stammering is a nervous disease, seldom acquired elsewhere than at school, and it is acquired there in two ways, by imitation and by impatient, irritating treatment in class. Of course, a child should not be excluded for so slight a cause as this, but the acquisition of the habit can be prevented, and the habit itself cured, in its inceptive stage, by care and patience on the part of the teacher. The first time a child commences a stuttering answer in class, he should be stopped gently and kindly, told to collect his thoughts and not speak till he is quite ready with what he has to say; above all, other pupils should not be allowed to prompt or correct him until he has either succeeded or failed without interruption. After first stopping him, he should be asked whether he understands the question, and if not, it should be repeated and explained, and then the pupil told to take his time about it, and, if the habit has not been fully formed, he will probably answer without a stutter. On the other hand, a little impatience on the part of the teacher on such occasions will go far to establish stammering, first as a habit, and afterwards as a disease, liable to last for life.

HYGIENE OF THE SCHOOL BUILDING AND PREMISES.

The great body of reports like the present is generally occupied with the treatment of this subject. I do not follow the example. Most of the topics discussed under this head belong to general hygiene, and should be discussed in that department. Thus, much is generally said about the

drainage and sewerage of school premises. On this I have only to say that the efficiency of these depends very largely upon the sewerage and drainage of the town in which the schools are placed. If the general arrangements for these purposes are bad, those of the school cannot be good. On this head, then, nothing need be said, except that the privies ought to be placed at a sufficient distance from the school-house, and from the cistern or other provisions for water supply (at least fifty feet from either), and that the surface water should be prevented from penetrating to the cellar. Of the interior of the building, something must be said in reference to ventilation and lighting; in other words, to matters affecting the respiration and visual powers of the inmates.

RESPIRATION.

It has been the custom, in works on architectural hygiene, to prescribe the number of cubic feet to be occupied by a given number of inmates; more recently, and more philosophically, it has been made the criterion that the whole mass of the air in a room occupied by many people should be capable of being frequently changed. The calculation is received that a minimum of 2,000 feet for every inmate should be entirely removed and replaced by fresh air every hour; and very complicated apparatus has been invented for the purpose of effecting this, far beyond the reach of public schools in Tennessee. To show the impracticability of this, I have made a calculation of what this would imply in a school-room under my observation. The room is 55 by 35 feet, and 14 feet high, which gives:

Cubic dimension of room	-	-	-	-	26,950
* Mass of air to be changed per hour	-	-	-	-	200,000

Dividing the latter number by the former, we get a quotient of between 7 and 8; in other words, the whole mass of air in the room would have to be changed

* I assume the room to be occupied by 100 pupils; unfortunately, it in fact contains nearly 200, at times.

between seven and eight times an hour to fulfill the above requirements. There is certainly not a building in Tennessee, for school or any other purposes, in which this could be done, and probably not many in the United States. Booth's theater has probably effected this at an enormous expense, being considered a miracle of sanitary contrivance—a powerful steam engine is kept at work for the purpose during performances.

Instead of prescribing impracticable things, therefore, I will present some practicable suggestions for doing the best with more or less defective arrangements.

I. Let every window be constructed so that it can be opened at top as well as bottom. This, in winter time, will enable communication with the outer air without bringing a draft upon the inmates. In every heated room the air has an upward motion, on account of the greater rarity of hot than cold air. But,

II. This motion will not be sufficient to exchange any considerable quantity of air, unless air is admitted from below as fast as it can be removed from above. Here comes in the difficulty of avoiding injurious drafts. The desideratum is to admit air which is warm as well as fresh. Where the room is heated with hot air from a furnace in the basement, let the furnace-room communicate freely with the external air, which will be warmed by contact with the furnace, and let this warmed air be admitted to the school-room through perforated metal plates in the floor. [I take it for granted that in this case the basement will not be used as an urinarium, though I have known of such outrages.]

III. Let the room be, several times a day, emptied of pupils long enough for all the windows to be thrown open, and complete ventilation effected. I think this can be carried out with less loss of time than might be supposed. Thus, in graded schools, there is always a movement, once in a half hour, of scholars from the recitation room to the hall and *vice versa*. Now, let this movement once an hour be made by a detour out of the room and round the play-

ground two or three times, and while this is going on, let two or three pupils be detailed to open the windows at one tap of a bell, and close them at a second, say five minutes afterward, and let the second tap be the signal for the return of the pupils to the building, and to their several destinations. The great ingenuity of modern public school teachers could, I am quite sure, effect this without the loss of more than five minutes additional to that now consumed, and that five minutes in time would be more than compensated by the increased alacrity caused by the inhalation of that much oxygen. Contrivances of this sort, which could be largely supplemented by the intelligence of teachers, once directed to the subject, would go far to counteract very defective arrangements for ventilation in the building.

LIGHTING—EFFECTS ON VISION.

Strabismus and *myopia*, in other words, squinting and near-sightedness, are diseases very generally acquired at school; a few words, therefore, must be said as to precautionary measures against them.

Near sightedness is acquired by too great a strain on those minute muscles which adapt the eye to different distances, as well as to those which regulate the quantity of light admitted into the interior of the organ. It is therefore promoted by looking at objects too small, or too far off for distinct vision. Hence, the distance of the blackboard and the size of the letters written on it; the position of the book on the desk, and the quantity of light thrown upon it, have much to do with the hygiene of the eye.

The blackboard should not have a shining surface, and all writing on it should be large enough to be read without effort or straining by every member of the class. It ought to be directly in front of the pupils, and its surface kept clean, so that there may be sufficient contrast between the chalk and the board.

The desk at which the pupil studies should be inclined at such an angle that the line from his eye to the middle of

his book should strike the surface of the book at right angles. Most of the desks I have examined are not, I think, sufficiently inclined for this; indeed, every peculiarity of vision requires a different angle. The ingenuity of manu'acturers of school furniture would be well applied in inventing a school-desk with an adjustable top, in which the angle could be adapted to the vision of each scholar.

Light should be so supplied as that it is diffused equally in all parts of the room, no pupil getting more or less than another, and none being exposed to the direct rays of the sun. Of course, this can be only approximately effected. It has been advised that it should come from only one side of the room, and that to the left of the pupil; but this arrangement is fatal to the equal diffusion of light; it will always cause a light side and a dark side in the school room. The principal light should come from the pupil's left, and, if possible, from the north, which would obviate the falling of the sunshine directly on the pupil's eyes.

Windows may admit light in any other direction except in front of the pupil, preference being given to the west, which is behind him, and the south, which is on his right; but blinds should be carefully adjusted on that side, so as to exclude the direct rays of the sun.

The only direction from which light should always be excluded is in front of the scholars, which, according to the above, would be east. As there is not always a choice of directions, I would recommend as the best, when attainable, light from the left and from behind; the former from the north, and the latter from the west.

A white-washed ceiling aids much in equalizing the diffusion of light; but the walls should never be white, which is very trying to the eyes. A bluish gray, or a pale olive green, are restful colors desirable for them.

Strabismus, or squinting, is promoted by any cause which tends to exercise one eye more than the other, as receiving light from only one side, having the blackboard on one

side instead of in front, both of which errors have already been pointed out; but a much more fruitful cause of it is brain exhaustion from the many forms of over excitement treated of in the early parts of this report; such exhaustion leads to local disease in the brain, paralyzing one or more of the muscles which move the eyeball.

In concluding this report, I have only to apologize for the length of it, and to anticipate and depreciate two objections which will probably be urged against it.

It will be objected that I have treated mainly of matters which belong rather to the teacher than to the physician, and that the changes I propose are visionary, impracticable and Utopian.

In answer to the first objection, I can only maintain that whatever in our school system affects the health of the pupils, is legitimately within the scope of the present report, and cannot be neglected without rendering such a paper nugatory and valueless. It is the result of long consideration, and of the slow adoption of opinions, the reverse of others previously entertained by me. I have, ever since the war, watched with interest the establishment of the public school system in the South, and have witnessed with satisfaction its elaborate organization and its perfect adaptation of the means to the end in view. Its problem has been to educate, in a limited time, the largest possible number of children at the smallest possible expenditure, which, of course, implies the smallest possible number of teachers. What it has done in this respect, is truly wonderful; its incessant stimulation of the pupil's efforts, the marvelous smoothness in working effected by its methods of discipline at once so precise and so complicated. All this has brought the management of our first-class public schools to a perfection, which, as a machine, places them on a level with the chronometer or the steam engine; and our satisfaction with them would be complete if the wheels and levers of that machinery were of brass and steel; but, alas, they are

the brains and nerves of young children and half grown youths.

Having satisfied myself that these excessively delicate and tender organs are seriously injured in a multitude of cases, and in some, injured for life, I could not be silent. My strictures are addressed not to our inferior schools, but to those which are most perfect—most perfect, that is, as machines, to those in which the teachers are most conscientious, most energetic and accomplished. I am attacking nobody; I am attacking errors in which I have myself participated while officially associated with our public school system, the mischief of which I have myself been slow to perceive.

The other objection is not so easily answered. To detect error must always be a simpler process than to devise remedies for it; but the first process must necessarily precede. The evil once recognized and public attention secured, more than one mind will be called to the solution of the many difficult problems mooted, and public opinion, powerful as it is, is a machinery which it takes time as well as talent to set in motion. I am not so vain as to suppose that anything in this report will attract attention over more than a very limited area, but even that may be a beginning and may enlist other minds than mine in the effort to cure the evils pointed out.

I will, therefore, conclude here with recapitulating the leading reforms which I consider should be aimed at.

First: To separate the treatment of very young children entirely from the general system, assigning them to ladies who combine the qualities of a tender mother with those of an enlightened teacher.

Second: To increase the number of teachers in proportion to that of pupils, so as to render some discrimination possible, some attention to diversity of character.

Third: To lengthen the recess and provide opportunity for systematic bodily exercise.

Fourth: To separate the sexes after the age of thirteen.

POSTSCRIPT.—Since drawing up the above report, I have learned that Dr. Crichton Brown has made an official statement on the sanitary condition of fourteen government schools in London, in which the main point dwelt upon is *overpressure* in elementary schools. I have not been able to obtain a copy of this report, and can only judge of its purport by some extracts from it in the *New York Nation* of October 2d. Judging from these extracts, I am satisfied that the chief positions taken in the reports are identical with those I have endeavored to establish in this paper.

Dr. Crichton Brown states, as his starting point, the large increase in the number of suicides in England, showing that, within the present century, their percentage of the whole population has quintupled, and that a very considerable item in this increasement is referable to juvenile suicides, including those under sixteen years of age. He also cites the statistics of insanity, showing that 43,346 patients have been added to the number of registered lunatics within the last twenty years, which is just the length of time since public education became general in England.

This portentous array of facts he accounts for by what he observed in the schools above mentioned. The following may be taken as a sample of these observations :

“It is now certain that more than one-third of the children attending elementary schools in London suffer from habitual headache. I have examined 6,580 children in elementary schools in London on the subject of headaches, and have found that 3,034, or 46.1 per cent., profess to suffer from them habitually. Great pains were taken to secure accurate ‘returns. In one school containing 381 boys, 129 were sleep-talkers and twenty-eight sleep-walkers, this being a school in which home lessons were insisted upon. In a school of 432 girls, there were seventeen somnambulists, and in another of 382, there were twenty. Tabulated statistics shew furthermore, that 53.4 per cent. of the boys, and fifty-five per cent. of the girls, suffer

from neuralgia and tooth-ache; and short-sightedness increases so rapidly that it threatens to become a national infirmity, as in Germany. A remarkable contrast to this state of affairs is offered in the schools of Scotland. Only twenty-three children (nine boys and fourteen girls) out of 335 complained of headaches, which gives a percentage of 6.5 against 46.1 for London. One child, a nervous girl, out of the 335, complained of sleeplessness, and there was just one instance of short-sightedness, while not a somnambulist was to be found; the reason being that they are well fed on porridge and milk as the staple articles of diet, with broth, potatoes, butter, tea, and occasionally a bit of meat or bacon. They are warmly clad, and wear stout clogs in winter and go barefooted in summer. They are much in the open and uncontaminated air."

It ought to be stated, however, that in London starvation is specified as one of the conditions which render this over-pressure fatal; in fact he enumerated three types of children who cannot bear it, the dull, the starved, and the delicate.

Happily starvation is not an appreciable element of mischief in Tennessee, and dullness is the exception, but delicacy of constitution is much more prevalent among our children than it is further north, especially among children of intellectual tastes and sensitive temperaments.

The Doctor further deprecates the practice of giving young children lessons to learn at home, as inimical to sound sleep, and productive of the somnambulism and sleep talking spoken of in the extract cited.

In reference to the constant occurrence of headache, I can say that I observed the same thing in the Clarksville schools, and especially, that the cases of chorea were always preceded by frequent recurring headache.

As to the increasing prevalence of insanity, very little need be said. No physician, versed in nervous pathology, will hesitate to say that a school system which is abundantly productive of headache, sleeplessness, sleep-walking,

sleep-talking, chorea, squinting, and short-sightedness, will be fruitful in insanity in after life. In Tennessee, I am firmly convinced that we are already reaping this deadly harvest—our overcrowded asylum still insufficient to receive anywhere near the number of our lunatics, while hundreds of them, for lack of accommodation, are imprisoned in county jails—these things are more impressive, when barely stated, than any comments of mine could make them.

But I must make room for one more citation to them, showing that, like myself, the author quoted does justice to teachers, and saddles the responsibility on those who exact this pressure of them:

"In one school containing 448 boys, 9 only were to be withheld from examination, whereas, the doctor easily pointed out 35 in regard to whom the teacher readily agreed that, were it not for fear of the inspectors, they would be classed as quite unfit for hard mental labor; and in the girls' school there were 46 such cases among 341 pupils. A medical report is recommended as of use in such cases, and, better still, a log book containing a register of the height, weight, head and chest girth of the children."

I am thankful to find my own crude observations confirmed by those of so high an authority.

APPENDIX.

REPORT OF A SANITARY INSPECTION OF THE PUBLIC SCHOOLS IN THE PRINCIPAL CITIES IN TENNESSEE.

It would be a reasonable expectation that a State report on school hygiene should contain some statistical information on the existing sanitary condition of public schools in Tennessee. I have done my best to satisfy this expectation, and now present the results of my efforts, so far as I consider them successful in obtaining facts which can be relied upon. To publish any other, in the form of statistical statements, would be an obstacle rather than an aid to sanitary knowledge.

My first step in this direction was to draw up a series of questions relating to plain methods of school hygiene, which I submitted to the Hon. Thos. H. Paine, State Superintendent of Public Instruction, requesting that, should they meet his approval, he would use the machinery of his Board for their circulation. That gentleman responded promptly and zealously to my request, but the form of my questions had to be materially altered. I had drawn them up as put to individual teachers, whereas, the circulars were to be addressed to Superintendents of counties, who answered each for a large number of schools, sometimes as many as nearly two hundred. The change thus necessitated in the nature and form of my queries may be inferred from a few examples: thus, I had inquired the number of rooms in the school building, the number of windows in

each, and the direction in which they received the light, the site, whether on high grounds, the nature of the drainage, etc. These questions had now to be put as follows:

"State the number of school buildings with high grounds; number with low grounds; number well drained; number badly drained; number of one-room school buildings; number of two-room buildings; number with more than two rooms; number with sufficient arrangements for lighting; average number of windows in each," etc.

I need add no more. It is evident that information based upon such wholesale questions must be very indefinite in its character. But I have evidence which satisfies me that it is not only indefinite, but unreliable. At the time these questions were circulated, most of the Superintendents had prepared their reports, and whatever inspections of schools had been made, and whatever interrogations had been put to teachers, all was done and over, and the inspections which had been made, and the interrogations put, had been without reference to our sanitary questions, or to any sanitary questions whatever. Responses, therefore, to our questions had been made without the attention having been previously directed to the subject matter of them; of course, responses so made must be very vague.

But the replies to these queries show on their surface that they are unreliable, and, in some of them, the very reason is given for their imperfection, which I have above suggested. Thus, one Superintendent subjoins frankly to his reply this remark: "In visiting the schools, last summer, I did not know that this report would be required; hence, it is made from the best information I have at hand."

One gentleman says: "Many questions cannot be answered, being adapted to city schools." And one who answers no questions, says, bluntly and honestly: "I am not in possession of the information sought."

I will go no further. If I were to offer the results of

these queries to the Board, as statistics, I should be deceiving them and the public, and adding to the existing resources of hygienic science nothing but probable materials of error.

The only conclusion to this part of my inquiry is that without defect of duty on the part of teachers, County Superintendents or the State Superintendent, the machinery for producing reliable sanitary statistics of our county schools does not exist.

With regard to city schools, these are generally under the control of special Superintendents, who have them always under their supervision, and who are well acquainted with the condition of each school. From these City Superintendents I have received reports somewhat more satisfactory, but the questions were too general, as addressed to them, and, perhaps, my questions as originally framed would have been more appropriate, as tending to procure statistics of individual schools.

In view, therefore, of these failures to procure the information so much needed, I suggested to the Board, at its October meeting, a personal inspection of the schools in our principal cities, in response to which I was commissioned to visit the public schools in Knoxville, Chattanooga, Nashville, Clarksville, Jackson and Memphis, and report upon their sanitary condition. The result of this investigation I now lay before the Board.

KNOXVILLE.

VISITED OCTOBER 24, 1884.

Reported at once to Supt. C. H. Collier, who aided me with both zeal and courtesy in my visit to all the schools in the city, numbering in all eleven buildings.

Knoxville is a site very favorable to natural drainage.

being a rolling valley, between two high ridges, with drainage to the Tennessee river; consequently, but little criticism is needed on that head, except in one instance, which was, unfortunately, the first presented to me.

THE BELL HOUSE.

I hope this is the worst school building in the State, from the sanitary point of view; it is certainly the worst I ever saw in East and Middle Tennessee. It is an abandoned third-class hotel building of three stories, divided on the ground and upper floors into three rooms each, and on the middle floor into five. On this floor I measured the largest room and found it eighteen by twenty-one feet, the rest being about the dimensions of the average hotel bedroom. The windows are far too few, and badly placed for light and ventilation, no other provision for ventilation being possible; the windows are not even constructed so as to open at the top.

The play-grounds are quite small, and the drainage is from the back towards the house. The privy vaults are on a rising ground, very little distant from the building, and the bottom of the vault is probably on a higher level than the ground floor of the building. In no one of the requirements of sound hygiene does this building merit anything but unqualified condemnation, which is the more remarkable, as, with one exception, the schools in this city are far above the average degree of sanitary merit.

In this building were crowded, the preceding month, an average attendance of 594 children and 12 teachers. The sexes are taught together in the first and second grades, and in the ninth and tenth; in the intermediate grades they are separated. For reasons, assigned in the body of this report, I believe the separation would be made more advisable in the highest. But the difficulty in this arises from the very small number of male pupils who attend the high-school classes, and the impossibility of providing instruction for so small a number.

I will return to the subject of the Bell House, when I give a general statement regarding the schools at Knoxville.

GIRLS' HIGH SCHOOL.

The site of this school is eminently favorable to sanitary arrangements, provided due advantage were taken of it. Nor is the building altogether objectionable for a school of half the number of pupils. But it was originally built for a moderate sized village school, and is now occupied by numbers largely disproportioned to its capacity. At my request the superintendent had the rooms on the first floors measured, and favored me with a statement of their dimensions, and the number of pupils accommodated by each. In the body of the building there are two rooms, each twenty-eight by twenty feet. These serve for study-hall and recitation-room for forty-seven pupils; in the wings are two rooms, each twenty-two by twenty feet, one occupied by thirty-four pupils, and the other by forty-two. These latter rooms should not be continued in use for a day. They are not only overcrowded, but, being built with their floor close to the ground, which is evidently badly drained, are damp and unhealthy in every way; the very odor, on entrance, is sufficient to condemn them.

Such a site certainly ought to be occupied by a creditable building. It is a rising ground, overlooking Main street, and forming part of the ridge, which rises higher, until it becomes continuous with the lofty hill on which the University of Tennessee is built. There is plenty of room there for a really sanitary building of the first-class.

BROAD-STREET SCHOOL.

Rather a low situation, but drainage sufficient. The building is an old church, which has been divided longitudinally, with two long, narrow rooms, each forty by thirteen feet. The ventilation by the windows is sufficient and the light well distributed. The play-grounds are very small, being mere passages leading to the back of the

The privy vaults are too near the building, but on lower ground, which partly obviates the objection. The children attending this school are all of the preparatory classes, and attend only two and a half hours a day, one division being received in the morning, the other in the evening. This arrangement obviates in some degree the objection to the insufficiency of the play-grounds.

MECHANICSVILLE HOUSE.

This building, well situated for air and drainage, comprises two floors, each containing three rooms, of the following dimensions; one room 30x20 feet, attended by twenty-five to sixty pupils; two rooms, each 27x24 feet, attended by forty pupils each; play-grounds sufficient and all other arrangements unobjectionable.

FAIR VIEW SCHOOL—COLORED.

This is a negro church building, rented to the city at a nominal rent, as a school-house on the mornings of week days, but occupied at night and on Sundays for church purposes and various assemblies. It is situated in an open part of the town, nearly in the country, in fact, and the sanitary condition is generally good.

There are two rooms, one 45x25 feet, used as a study hall, and the other, 25x15 feet, a recitation room. The number of scholars is about sixty, and all the arrangements highly creditable to the colored people who manage the school.

PEABODY SCHOOL.

Almost entirely occupied by boys; site, high and dry; general arrangement good; two floors, with two rooms on each; each room 32x21 feet. The boys are healthy, noisy, and a little unruly in play-time, as the teachers tell me, and as I had the opportunity of seeing, and was glad to see. On the whole, this was the healthiest school inspected in Knoxville.

HAMPDEN-SIDNEY SCHOOL—FOR GIRLS ONLY.

A three story building, with two rooms on each floor, each $37\frac{1}{2} \times 21$ and about 12 feet high; construction in all respects good. Each room has windows on three sides, and with proper management of the blinds, plenty of light can be admitted without injury to the eyes of pupils; but while I was there an afternoon sun was shining full in the faces of several rows of pupils through the west windows, evidently to the injury of their eyes. I called the attention of the Superintendent and teachers to the fact, who assured me that proper blinds would be put up immediately. In all other respects this is a very desirable school building.

AUSTIN SCHOOL—COLORED.

One of the finest school buildings in Tennessee. It was the gift of a charitable lady, who settled in Knoxville soon after the war, and who devoted herself to the bodily and mental improvement of the African race there.

All the appliances for teaching and every provision for the health and comfort of the pupils are handsomely provided for.

There are three large rooms on each of two floors, and although the provision was at first ample for the numbers then, with the increase of population they seem to have already overflowed their limits, and a small frame building of rather flimsy construction has been added in the rear.

I cannot close this account of the Knoxville schools without a few general remarks. The people of this city are evidently alive to the importance of general education for all classes, and have provided liberally the means of effecting it; but nothing could have been stated to demonstrate so plainly the difficulty of calling attention to public hygiene, as the sanitary heresies described in the case of the Bell House and the Girls' High School on Main street. The excuse for them is that they are the older buildings, and are situated in the older parts of the city; the newer

school buildings are, for the most part, creditable to the community in which they have been built. I am satisfied that, if some of the citizens would visit successively the old and the new buildings, the very aspect of the children would convince them that there is something wrong in the former, for it is visibly affecting the health of its inmates. Let any one compare the sallow, languid faces and sluggish frames of the children in the Bell House with the sturdy, bright-eyed boys of the Peabody House, or the healthy negroes of the Austin House, and a demonstration stronger than any in sanitary science will be before them.

I was credibly informed, when at Knoxville, that the Bell House was abandoned as a hotel on account of its patrons finding it so unhealthy. Moreover two of the best citizens told me that they were intimate friends of Prof. J. H. Pittner, who died of malarial fever while principal of the schools in that building, and they agree in attributing his death to its malignant influence.

It cannot be selfish indifference in the citizens which prolongs the existence of such an anomaly, for it is their own children who suffer, and they certainly love them better than a philanthropic stranger can love the negroes for whom the Austin House was built; it can only, therefore, be the habitual disregard of sanitary considerations, which has exerted so baleful an influence upon the health of our cities. Only let public attention be peremptorily demanded to the evils affecting the health of the Bell House, and I cannot doubt that it will soon be improved from off the face of the earth.

CHATTANOOGA.

VISITED OCTOBER 22, 1884.

Through being a comparatively new town, Chattanooga possesses the advantage of not having any old buildings on

objectionable sites, and of obsolete structures to convert into schools; the buildings she has are built for school purposes, and more or less in the light of modern experience. Like all our growing cities, however, the increasing population continually outstrips the school accommodation provided for it. The varied surface furnishes a choice of eligible sites, with good facilities for drainage, and of these advantages the building committees have generally availed themselves.

FIRST DISTRICT, OR HILL BUILDING.

This building consists of six study halls and four recitation rooms. Two of the study halls on each floor are thirty by twenty-four feet, and one forty-five by twenty-one feet. The two smaller ones are not well lighted, and some of the rooms are over-crowded; ventilation flues connected with the stoves in such a way as to secure circulation of air. The play-grounds are large, site good, privies on the dry box system.

HOWARD BUILDING, ON GILMORE STREET—COLORED.

The buildings for colored schools in Chattanooga are all called Howard schools, in honor, I presume, of some philanthropist who has interested himself in the education of colored children. This is an excellent building of two stories, and a basement with four study-halls, and two recitation rooms on each story. The dimensions of the study halls are thirty-six by forty-two feet, of the recitation rooms eighteen by thirteen feet. There are ventilation flues in each room communicating with the exterior, and with apertures near the stoves so as to heat fresh air as it is admitted. The windows are well placed so as to admit light for the side and rear of the scholars. The attendance averages eighty to each of these study-halls. There are two rooms in the basement besides those above described. The latrines are well constructed vaults. As in Knoxville, the colored people seem to be better cared for in regard to schools than the whites.

HIGH SCHOOL AND SECOND DISTRICT.

This is a large three-story building, containing fourteen rooms, occupied by eleven teachers. The rooms are well lighted, the windows being judiciously placed; they are heated by stoves, a method not so objectionable in narrow rooms, as in those which are broad as well as long; their dimensions are one long room forty-five by twenty-four; two smaller ones, thirty-four by twenty-two—this arrangement being repeated on each floor. Besides these, there are on each floor two recitation rooms, each twelve by twenty-one feet. The radical defect of this building is the absence of play-grounds. It is not merely that the lot admits of only a passage on each side to the rear, but even this is not enclosed, and, during recess, the children take their amusement in the open street, a practice conducive neither to moral nor physical health; and the defect is the more objectionable as the high school is included in the building, which consists principally of girls approaching womanhood.

THIRD DISTRICT SCHOOLS.

This is a large two-story frame building of very simple structure, and, perhaps, the healthier for its simplicity. On each story a broad passage runs through the whole building longitudinally, on each side of which are two large school rooms, making eight in all. Eight grades are here taught.

The rooms are heated with stoves. The play-grounds are the largest I have seen attached to city school houses, and, on the whole, it is one of the most creditable establishments I have seen in this city, from a sanitary point of view, with one drawback, however—the privies are too small for either health or decency.

HOWARD SCHOOL ON NINTH STREET.

This building has only recently become the property of the city, and alterations and additions are in progress, adapting it for school purposes. I am unable, therefore, to express an opinion upon its sanitary merits.

Knoxville and Chattanooga run a close parallel in regard to their schools, thus:

	NO. TEACHERS.	NO. PUPILS.	AVERAGE NO. PUPILS TO EACH TEACHER.
Knoxville	48	2,243	46.73, very nearly.
Chattanooga.	43	2,294	53.35, very nearly.

Thus, Knoxville has the advantage in the supply of teachers, which is a very important element of health for both teacher and scholar. On the other hand, Chattanooga has no buildings as bad as the Bell House and Girls' High School of Knoxville, nor as good as the Austin House, the Peabody, and the Hampden-Sidney in the same city.

NASHVILLE.

VISITED OCTOBER 28, 1884.

Nashville labors under some sanitary disadvantages, which she is, at this time, endeavoring to rectify, and in which her public schools necessarily participate in some degree. Her water supply is derived from the Cumberland river, at a point beyond which her city population has now advanced, and at which, therefore, the surface drainage of a city population is received into its stream. The sewerage system, moreover, is very incomplete. The rock in most points of the city approaches the surface so closely as to render the construction of sewers possible only by a very expensive process of blasting. So far, however, as these disadvantages can be obviated in separate buildings, pains have generally been taken to do so.

FOGG AND HUME SCHOOL BUILDINGS.

As these two buildings are both on one lot, they have partly to be considered together. The lot admits of so small a space for play-grounds that there are virtually none at all; the privies are good and arranged with water connection with the public sewers. All these arrangements are in common for the two schools. The Fogg building was built as a high school, but only its two upper floors are used for this purpose; its lower floor is practically part of the Hume building. To consider these buildings separately, I commence with the

FOGG HIGH SCHOOL.

This is a three-story building, on each of the upper floors of which there is a large study-hall forty-one by sixty feet, with a projection on its east side three by nineteen feet. This occupies somewhat more than the eastern half of the area, while its western portion is divided into three recitation rooms, two of which are thirty feet by nineteen feet four inches, and a third forty feet four inches by nineteen feet. The ground floor has precisely the same arrangement, with the exception that from the study hall a portion, about thirty by twenty feet, has been cut off for the principal's office. The study halls are lighted by seven windows on the east side, with two others on the eastern extremities of the north and south walls respectively. This distribution of windows gives an excess of light on the eastern side, and not enough on the western side, which is adjacent to the recitation rooms. The two smaller recitation rooms are well lighted, but the large one between these, being a long, narrow room, having its windows at one end, the disposition is favorable neither for light nor for ventilation.

I have dwelt more in detail upon the plan of this building than on that of others, because it gives me the opportunity of laying down a principle. A long room can only be efficiently lighted from one side when it is twenty-five

feet wide or less; if wider the inequality of illumination is liable to result in myopia, strabismus or amaurosis. Still less can a long room be well lighted from one end; and where, as in almost all our school buildings, ventilation depends mainly upon the windows, the objection to this arrangement is more than redoubled.

I will here also say what needs remark as to the smallness of the play-grounds. On this head I have urged the question but little in the case of the schools hitherto inspected, viz.: those of Knoxville and Chattanooga, because in those cities a dinner recess is given of an hour in the former city and an hour and a half in the latter. Where this is done, the play-ground is a much less urgent matter than where, as in Nashville, the five hours are taken at a stretch, with a recess of not more than half an hour, and sometimes less. In this case, it is a very serious matter to have a play-ground in which nothing like exercise can be obtained, nor any recreation better than lounging or loafing. Under these circumstances the recess amounts to little more than exposure to the cold in winter, and to the broiling sun in summer.

Of the Hume building less need be said, for standing as it does in the same lot, all the outdoor accessories may be considered as sufficiently dwelt upon. The building itself is constructed on a plan more favorable to sound hygiene than the other. It also is a three-story building, the height of the stories from the ground upwards being respectively thirteen feet two inches, thirteen feet eight inches, and thirteen feet ten inches. There is a passage running through each story about ten or twelve feet wide, (a very desirable arrangement) and on the upper floor there is on each side of this passage, a large room thirty by fifty-one feet, and on the two lower, a similar arrangement, except that the large rooms are divided by a partition into two rooms of thirty by twenty-five feet each, making four smaller rooms instead of two large ones. There is also a partition in the middle of the passage on each floor, the

abolition of which has already been recommended [See the report of Dr. J. Berrien Lindsley on the mental and physical hygiene of the public schools, included in the third report of the Nashville City Board of Health.] I would extend the recommendation to a removal of the partition dividing the rooms on the first and second floors, reducing the number of rooms from four on a floor to two, but doubling their size; and I am glad to find that Prof. Brown, the principal of the building, concurs with me in this opinion.

THE HINES SCHOOL.

This is a large edifice, consisting of a center building and two wings, the former three stories high, the latter two stories high. Of these, the ground floor and second floor are thirteen feet ten inches high, and the third story twelve feet seven inches. The center building is mainly occupied by a large study hall, fifty feet six inches by twenty-seven feet ten inches. On each side of this is placed an entrance hall and staircase eleven feet seven inches wide, which prevents it from receiving light, except from its two ends, which is the worst disposition of windows that can be made. On the ground floor this study hall is diminished in length by a recitation room, cut off from one end, fifteen feet nine inches wide.

On the outer side of the entrance hall above mentioned are the two wings, each occupied by a study hall thirty-two feet six inches by twenty-seven feet, much better constructed for both light and ventilation, as being open on three sides.

The play-grounds are too small to be taken into account at all. The privies have water connection with the city sewers, and are satisfactorily kept.

The ground floor is occupied by the first and second grades (preparatory) to the number of about 280, of whom, however, only one-half are received at a time; one division staying until 11:30 A. M., and the other, coming at that time, is dismissed at 2:30 P. M. The second and third

floors are occupied by the other grades up to the eighth, to the number of 160 on the second floor, and 52 on the third. This is a less number for the space occupied than in most of the schools, but too many even at that.

HOWARD SCHOOL.

This is a very fine building, the plan of which is in some respects peculiar. It consists of three stories, the heights of which, from the ground upward, are fifteen feet nine inches, fifteen feet ten inches, and seventeen feet eight inches, respectively. The peculiarity is, that a large study hall, seventy-two feet six inches by fifty-four feet, occupies the center of each story, from the corners of which the recitation rooms and staircases project, latterly, forward and backward, leaving a considerable space of each wall of the main building clear for windows. This enables the rooms to receive light from all four points of the compass. This architectural arrangement is unexceptionable but, for one drawback, the recitation rooms are much too small. There are eight of them on each floor, varying in dimensions from fifteen feet ten inches by fourteen feet, to thirty-five feet four inches by fourteen feet ten inches. There is only one of this latter size on each floor, but there might be others of the same size procured by throwing two into one. In this way there might very easily be made three large ones and three small ones on each floor, or even four large ones and one small.

I should think that this arrangement would secure sanitary advantages more than compensating for the diminished number of rooms. Six good sized rooms on a floor would surely be enough for all necessary purposes.

Stoves.—It is here that I think it best to protest against the stove abomination, because it is here that the evils of it are most conspicuously manifested on account of the great size of the room. Let it be said at once, that large rooms cannot be heated satisfactorily with stoves, when the occupants are so

numerous as to be distributed over every part of them. It was a cold day when I visited the Howard School; the room was heated with four stoves, one at each corner, and they had to be kept at a red heat in order to warm the room sufficiently; the result was, that the children seated at those corners were in actual pain, through the heat of the incandescent iron, while the parts of the room more distant were hardly up to the desired temperature. It is time that school-building committees and boards of education should know that stoves are an exploded nuisance. Men have found this out in regard to churches, which they only frequent once a week; in regard to public halls and theaters, which they visit, perhaps, once in several weeks, but in the school-buildings, in which their children are confined for five hours on five days in every week, they still tolerate the barbarism of close stoves, with all their noxious exhalations, with the obstacles they present to effective ventilation, and with the effect of roasting in one part of the room and freezing in another. Buildings like the Howard, and several others in our cities, can only be effectively warmed by furnaces from below, with apparatus for the equable distribution of heat in every room, and concomitant apparatus for the distribution of fresh air, warmed in its passage to the school-rooms. How this is done it is not for me to point out; there are now many ways of doing it, and the only rational course is consultation with a competent sanitary engineer.

The Howard School is far from being the only building liable to these strictures. They are applicable to all school-buildings, and are only introduced here, because, on account of the great dimensions of the study-halls, the evil is there most severely felt. The strictures are more or less applicable to all large school-buildings.

I regret to add that the privies of this school are far from being in a satisfactory condition. The sewerage apparatus of the city does not extend to this part of town,

and privy vaults are used. Whether these are not deep enough, or not cleansed often enough, I have no means of knowing; but, in either case, the arrangements are not nearly extensive enough for the numbers attending the school, which, the month before my visit, averaged 1,100.

BELLEVUE SCHOOL—COLORED.

I shall not give any details of this school as to building, accessories, or management. The choice of the site was so completely fatal to any possible sanitation as to make all other provisions for hygiene necessarily futile. It is situated in the low lying district of the town, which has always been the home of malignant endemic influences, and the chosen resort of destructive epidemics. But, in addition to this, the lot, including the privies, is frequently overflowed, and, in the last great freshet, the ground floor of the building itself was six feet under water. No more need be said; no building on such a site can be made even defensible as an establishment for education.

NINTH WARD SCHOOL.

It was a very agreeable surprise, after going through a neighborhood of rather forbidding aspect to get to it, to find so admirable a building as the Ninth Ward School, and one so well managed. The general plan of this building is similar to that of the Howard School, but with a difference which I think is in favor of the present building. The principal room on each floor is a large study-hall, sixty feet by thirty-seven and a half feet, with the corners, however, cut off, so as to give the room the form of an elongated octagon; from these truncated corners extend four annexes, two of which, on each floor, are occupied as recitation rooms, and two others contain the staircases; there are two stories, with a good dry basement under them. The play-grounds are large, and room is made for a pretty flower garden, for the most part tended by the pupils.

There is no public sewerage near, but the privies are

kept clear by a water supply emptying into a cess-pool at a considerable distance from the building.

Altogether, the Ninth Ward School is the most satisfactory I saw in Nashville.

TRIMBLE SCHOOL.

A distant outpost of the city, built for a country school when this portion of the city was a country neighborhood; it is small compared with the other establishments, its seating capacity up stairs being ninety-eight and down stairs ninety-six. In the lower story the first and second grades are taught in separate divisions, one in the morning, the other in the evening, so that the whole number taught there is 192, bringing up the total attendance to 290 for the whole building—more than this are not allowed to attend, but any surplus of pupils in the district are sent to the Howard school.

This establishment retains some of the advantages of a country school, especially in the size of the lot; but much of this advantage is lost by the reservation of the large front yard for ornamental purposes, whereas, it would be of inestimable value for a play-ground. The principal halls are twenty-eight feet two inches by forty-four feet, with a recitation room to each of twenty-eight feet two inches by eight feet.

[In the description of the Nashville school buildings, I have, so far, had the advantage of the architectural survey of them made by Mr. Wm. C. Smith, architect, for the Third Report of the Nashville Board of Health, published December 31, 1878. In respect to the remaining schools, which, having been since constructed, or for other reasons have been excluded from that survey, I have either omitted the dimensions of rooms or made a rough estimate of them by stepping.]

MEIGS SCHOOL—COLORED.

In South Nashville, a creditable building of two stories, containing one large study hall and four recitation rooms

on each floor. The play-grounds are good; the privies are vaults about eight feet deep, apparently well kept. The pupils here taught are from the first to the sixth grade inclusive, of whom the fifth and sixth are taught in the upper story, the rest on the ground floor. Average attendance, upper story, 50; lower story, 300, of whom only one-half attend at a time.

PEARL SCHOOL—COLORED.

A very good building of two stories, with a good basement, attended by nine grades. There are large halls on each floor, about sixty-three by forty-four feet, of good height, with six recitation rooms. The first, second and third grades are taught on the ground floor, the rest in the upper story. The arrangement of the windows for the distribution of light are good, and, also, for ventilation, so far as that can be effected by windows. The privy vaults are ten feet deep, with drainage from the school.

I have now to omit two not very important schools in the extreme western suburbs of the city, having lost my notes relating to them. They are in a newly built-up part of the city, sparsely inhabited at present, and will doubtlessly be improved as population increases around them. They are the McKee School, colored, and the Tarbox School, white.

Crossing the Cumberland, we now arrive at East Nashville, formerly a separate corporation under the name of Edgefield.

MAIN STREET SCHOOL.

This is a large building of three stories, occupied by 725 pupils, and fourteen teachers. The ground floor and upper story are divided into four rooms each, the largest of which is about fifty feet by thirty feet. The middle floor is less divided, consisting of one large study room, with four recitation rooms.

The higher grades occupy the ground floors, the little children the middle floor, and the intermediate classes the

upper story. This is the only school in the State in which such an arrangement of classes is made, and I wish to speak of it with special approbation. For reasons specified in the body of this report, it has been contended by the best hygienic authorities, that it is a very objectionable practice for girls approaching puberty to pass up and down two high staircases several times a day. In many of the schools which I have visited, I have accordingly suggested an arrangement like the present, and been uniformly answered that it would entail great difficulties in the way of discipline and the movement of classes. In answer to this, I can only say that here is a good school in which the arrangement is in practical operation on a large scale, with excellent effect, and with no trouble as to discipline or movement. I saw the classes changed from room to room, and the children dismissed for recess, and reassembled without the slightest disorder. What may be the difficulties anticipated, as inseparable from this arrangement, I have never had clearly explained to me by those who make the objection. I must add that Dr. A. J. Cavert, who is principal of this building and deputy superintendent for the schools on this side, manifested an exceptionally intelligent appreciation of sanitary provisions.

One excellent feature in this building I was near omitting, which is, that while stoves are here, as everywhere else, used for warming the rooms, the office and passages are heated by a furnace in the basement. This arrangement obviates some of the most important objections to stoves, as it enables the rooms to be kept sufficiently warm without heating the stoves red hot.

On the whole, this Main Street School impressed me as standing high above the average in a sanitary point of view.

MEIGS SCHOOL—COLORED.

A handsome two-story brick building, recently erected. One large study hall and four recitation rooms on each floor. The lower story is occupied by the first four grades: the

upper one by the fifth and sixth. There are 300 children taught on the lower floor, all of whom do not, however, attend at the same time, part attending till 11 o'clock, and then succeeded by another set, who arrive at that time. On the upper floor there are only fifty pupils, belonging to the fifth and sixth grades. A more equal distribution seems to be desirable. The play-grounds are sufficient, and the privy vaults, about eight feet deep, seem to be in good order.

At a considerable distance from these is the

NORTH EDGEFIELD OR SEARIGHT SCHOOL.

It is a small affair, quite recently established, and, through being misdirected, I failed to find it. Three grades are taught in it by two teachers.

In reference to the Nashville schools, I will only make one remark: that here for the first time, I fell in with the single session system, which, however, prevails throughout the rest of the State, Knoxville and Chattanooga being the only cities I visited in which there is a dinner recess of over an hour between the morning and afternoon sessions. In all the other schools I visited, viz., those of Nashville, Memphis, Jackson, and Clarksville, a session of five hours continuous study is kept up, with only an intermission of from twenty minutes to half an hour to break its continuity.

I consider the single session so objectionable that, though the matter has been incidentally spoken of in the body of this report, I will recapitulate the main objections to it.

1. *Too great a strain on the undeveloped brain of childhood.*—So much has already been said on this subject that I will only add that the principle has been recognized in most of our public schools as regards the youngest children. The general rule now is to divide each of the two first grades into two sections, one of which is kept in school till 11 o'clock, at which time the other section arrives and stays till the rest of the school is dismissed. This is now the rule in all the schools of the cities I visited, except

those of Clarksville, and there the exception is only in the white schools, the general rule prevailing in the colored schools. So far, it is well; but the little children are not the only ones to whom the single session, with its protracted mental strain, is injurious. I believe it to be so throughout all the classes, but especially so in what are called the high schools, for these are chiefly occupied by young women and girls, who have just attained, or are attaining the age of puberty. I have already given reasons why long confinement in one posture and protracted mental labor are specially injurious at this age with both sexes, but especially females, and I now reiterate that there is quite as much reason for breaking the five hours of continuous work in their case as in that of the little children.

2. *As affects digestion and nutrition.*—We will suppose the most common arrangement of a session from 8:30 A. M. to 2 P. M., allowing five hours for study and half an hour for recess. Where this is the regulation, the pupils generally pursue one of the three following courses:

(a.) They go the whole period from breakfast till school breaks up without eating.

(b.) They take their dinners to school with them and eat it during recess.

(c.) They take a light luncheon with them, and dine after they get home.

All these methods are unfavorable to the due nutrition of the body. In the first (a), the long fasting weakens the whole body, and with it the brain, while the exhausting work required of that organ occasions a special demand for strength, and therefore for nutrition, which is the only source of its strength. But, besides this, when the child does go to its dinner, one out of two things happens: either he is so hungry that he eats voraciously, too much and too rapidly for good digestion; or, what I have frequently observed, the nervous exhaustion has so far extended to the nerves on which a healthy appetite depends, that the child,

though needing nourishment, has a distaste for food—a condition frequently described by a person saying, “I am too hungry to eat.”

In the second case (*b*), the child has not time enough to eat healthily; he wants to get out to play; bolts his food; comes into school with it undigested and indigestible, and sits down to his desk with his nervous system attempting to do two things at a time: that is, engaged in the futile attempt at digestion and mental effort, with the whole system in a condition ill adapted to either.

In the third case (*c*), the luncheon generally consists of trash, and remaining undigested for the same reason as in the last case, destroys the appetite for dinner without furnishing the nourishment which dinner ought to supply.

I am well aware of the many inconveniences that may be urged against the desired change, but inconveniences shrink to nothing when compared with the pernicious influences of the present system upon the children's health, and I am satisfied that when the attention of parents is adequately directed to the subject, a change will be demanded, whatever the inconvenience, whatever the sacrifice.

Moreover, while the change is making, let it be understood that even the hour allowed at Knoxville, or the hour and a half at Chattanooga, is not enough. Two hours ought to be allowed: half an hour for dinner and an hour and a half for digestion, before mental efforts are renewed.

MEMPHIS.

There is no city in the United States in which so much attention has of late been given to sanitary affairs and so thoroughly as in Memphis; and, even though there are still outlying portions of the city in which the work is incomplete, the public mind has been so thoroughly aroused to the importance of the subject that considerations of hygiene

enter into everything that is done. In no department of municipal affairs has public opinion acted more effectually in this direction than in the management of the public schools, which in this respect, with one or two exceptions in the remote suburbs, take the lead among the schools of Tennessee.

SMITH SCHOOL.

Three-story brick building, four rooms on each floor, about 33x27 feet;* the windows well placed for ocular hygiene; walls colored a cool gray; ventilation by flues in the walls, but insufficient without opening the windows; heated by stoves; privies kept clean by a stream of water running through, discharging into the public sewer. Average attendance, about forty pupils to a room. A very satisfactory building.

MERRILL SCHOOL, ON ALABAMA STREET.

A long, one-story frame building, with a passage running through it longitudinally, having four rooms on each side. [Where sufficient room can be had for it, I consider this disposition of rooms one of the best that can be had.] The rooms are about 27x18 feet each, with an average attendance of thirty pupils in each, or a maximum of forty. The pupils of the first grade are only in school half time—one section in the morning and another in the afternoon. But, even so, there are too many pupils for the space allowed. The ventilation is excellent, being maintained through an opening in the roof, with which every room communicates. Water communication as before, with city sewerage; large play-grounds.

With the one drawback of overcrowding, this is an unexceptionable building, and it should here be stated that

* The dimensions of the rooms here given must not be taken as the result of accurate measurement; they are only approximately true, as estimated by stepping. I can answer, however, for their not being far from the truth.

this is a drawback which it shares with every school building in the State.

[The three schools next described are in a poor suburb which at present is outside of the general sanitary operations of the city, and the schools share in the defective sanitation of the district. They were, none of them, originally constructed for school purposes, and are considered as temporary expedients, to be superseded as early as possible by permanent buildings.]

POPE SCHOOL.

A two-story frame building, originally a private residence. The up-stairs rooms are about thirty feet by sixteen feet, ceiling about eight feet high; lower rooms of the same dimensions, with ceiling eight feet high.

The rooms are incapable of good ventilation or lighting; the play-grounds are sufficient; the privies, tubs on the dry earth plan. Two hundred and twenty-five pupils are here taught. The sooner this building is abandoned the better.

CATHERINE STREET SCHOOL—COLORED.

An old church, about fifty feet by thirty feet, frame building. It is divided into rooms two by a canvass (removable) extended longitudinally through the middle; there is a smaller room about seventeen feet by fourteen feet. The attendance is 168, of whom about 100 attend only half the day, making the average present at one time a little over 100. Privies, dry earth tubs. No play-grounds.

WINCHESTER STREET SCHOOL.

Two-story frame building; four rooms, low and narrow. Largest room forty-two feet by eighteen feet. Average attendance, 188, of which 110 are half-day scholars. Privies have water connection with public sewer. No play-grounds.

JEFFERSON STREET SCHOOL.

This was originally built for a boarding-house; it consists of two long, narrow rooms on each floor. The ven-

tilation might be improved at a very small expense, by enabling the windows to be opened above. Play-grounds very small, practically none. Water connection with city sewers.

MONROE STREET SCHOOL.

A one-story frame building, with ground plan of about sixty-three feet by fifty feet, and a passage running through longitudinally. Two good rooms on each side of the passage, well placed for light and ventilation. Good sized play-grounds. Water connection with sewers. A good building in all respects, but much crowded for room.

LEATH SCHOOL—LINDEN STREET.

A one-story frame building, about one hundred and five feet by fifty feet, with ceiling twelve feet high, and an additional detached building thirty feet by twenty-four feet. Longitudinal passage through main building, which contains eight rooms, each twenty-five feet by twenty-seven feet. Each room has good ventilation through the roof. Play-grounds ample; would be much improved by shade trees all around them. Water connection with sewers.

I think this the best school establishment in Memphis.

KORTRECHT SCHOOL—ON CLAY STREET.

A two-story brick building, exterior dimensions seventy-five feet by sixty-two feet; four rooms on a floor. Average attendance, 650. Water connection with sewers. An excellent building, but much overcrowded.

PEABODY SCHOOL—WEBSTER STREET, NEAR MAIN.

A two-story brick, seventy-two feet square outside, with wide passage through and broad staircase. Excellent internal arrangement; ventilators in the wall. Play-grounds of fair size, and surrounding commons sufficiently open to be available for exercise. Beyond city sewers; tubs used with dry earth.

SEVENTH STREET SCHOOL.

A one-story frame building, with two rooms of fair size, temporarily used as a primary school for colored children; not calling for separate description.

CONSPECTUS OF SCHOOLS IN MEMPHIS.

NAME OF SCHOOL.	NO. OF ROOMS.	NO. OF TEACHERS.	NO. OF PUPILS.
Smith School.....	12	13	466
Leath School.....	9	9	405
Peabody School.....	8	9	356
Merrill School.....	8	8	300
Jefferson School.....	5	5	200
Pope School.....	5	5	225
Kortrecht School.....	8	9	665
Monroe School.....	4	4	408
Winchester School	4	4	188
Saffarans School.....	3	3	168
Seventh Street School.....	2	2	84
	68	71	3,465

Average of pupils to a teacher, 48.8.

JACKSON.

The public school system has not long been established in Jackson, and much advance has not been made there as regards the material accessories of education; indeed, not one of the buildings used there as a school-house was built for that purpose, and only one is owned by the corporation, the rest being rented in various parts of the city.

The site, in its general features, is favorable to hygiene, but there is one element of disease already showing itself, which may be obviated if promptly met by wise sanitary measures; and, as school hygiene depends so largely on topical hygiene, I think its description is not out of place here.

The city is situated on the upper part of the western slope where the streams begin to take a western course toward the Mississippi. It stands on the lower tertiary for-

mations which, with the cretaceous beds, constitute so wide an area of the western slope. Now, the stratification of these two formations is almost exclusively of this character: it consists of thick banks of red, yellow and white sand, alternating with thin layers of stiff retentive clay. Where the clay is uppermost we have swamps, where the sand is on top we have a dry soil. Jackson is on the sand which, at a considerable depth, has its underlying bed of clay. The rainfall is very rapidly absorbed by the sand, leaving the surface dry, but is arrested at the surface of the clay stratum, where it is reached by boring, and furnishes the water supply of the wells which constitutes the drinking water of the great body of the population. So long as this was in the country it was a very healthy water supply; it was rain water, filtered through sand, and simply retained in place by the clay stratum. But when a city came to be built there, all this was changed; now the water, while filtering through the sand, carries down with it all the noxious ingredients which constitute the surface drainage of a city; these accumulate over the clay stratum, from the surface of which the well water is procured, and communicate to it an element of disease which is already making itself felt, and will increase in its power for evil as the city population increases in density. Already it is observed that the drinkers of well water are subject to fevers, from which those who drink from cisterns are exempt.

As this is a report on school hygiene, and not on general hygiene, I will only strongly urge that every school building in Jackson be supplied with a cistern of its own.

I have said that only one building used for public school purposes is owned by the city, and that alone will be described here, for it is useless urging people to spend money in improving property which does not belong to them.

THE LONG BUILDING.

This was a good sized private residence, of the old-fashioned plan—a two-story brick house, with two wings of

one-story each. The body of the house consisted of a central hall, running through the building, with two nearly square rooms on each side of it, and the same plan repeated in the upper floor, except that there is a small additional room now used as a recitation room. Each pair of rooms thus described has been converted into a single room by removing the partition wall between, so that now each story consists of a central passage, with a single long room on each side of it, adding a small recitation room up-stairs. Besides this, there are the wings, each about twenty feet square, one occupied as Superintendent's office, another as a recitation room.

The larger study halls are each forty feet by nineteen and one-half, and about ten feet high up-stairs, and rather more on the ground floor. The windows in these are so disposed as to offer fair average resources for lighting and ventilation with proper attention. The play-grounds are highly satisfactory, large enough for all practical purposes, and the girls' portion abundantly furnished with shade trees, while the boys' portion has already been planted with young trees. The privies are kept on the dry earth system, and are cleaned every week.

THE PRIMARY BUILDING.

In the rear of the above, and on the same lot, has been erected a one-story frame building. It consists of a study hall and five small recitation rooms, the study hall being a fine, large room, seventy-two by twenty-nine feet, and fourteen feet high, lighted by windows on both sides. Three hundred pupils are taught in it, but not all at once, the first two grades being divided into sections, which attend half times at different hours of the day. The number of scholars to the main building averages sixty pupils to each study hall.

For reasons already stated, I decline a separate description of the rented buildings; a sound school hygiene would promptly condemn all of them. Prof. Frank M.

Smith, the Superintendent, a very intelligent and conscientious gentleman, with a mind specially alive to hygienic subjects, does much to abate the evils of unsanitary conditions; but his limitations are very serious, and it is earnestly to be hoped will be shortly corrected. The present arrangements can only be considered provisional.

CLARKSVILLE.

This city has great natural advantages for drainage, and perhaps that is one reason why but little is done towards artificial drainage; only one street has a sewer, and in that the surface drainage and the sewerage both pass off by the same channel, a method not favorable to the efficient disposal of either. The school buildings are neither of them placed within reach of this sewer, and consequently have to depend upon their own resources in that respect.

THE HOWELL SCHOOL BUILDING.

This structure is placed on one of the best sites in the city, being on the summit of one of the four eminences which overlook the rest of its area. It is on a stiff clay soil, retentive of water. The lot has a frontage of 160 feet on the two streets, Franklin and Main, extending 425 feet back from one to the other; it has a considerable slope from front to back.

The building is of brick in three stories, the lower of which is raised three feet from the ground, with a cellar beneath for coal, etc. The height of these is, upper and lower stories, fifteen feet; middle story, fourteen feet. The arrangement of rooms on each floor is the same, being very similar to that of the Fogg building in Nashville. It fronts north and south, its entrance front being south. On each story is a principal study hall, thirty-eight by fifty-six feet,

facing east, and three recitation rooms facing west, two of which are fourteen by eighteen feet, and two sixteen by eighteen feet. This arrangement, while excellent in all other respects, entails the same disadvantage as it does in the Fogg building, that it necessitates all the windows in the study hall to be placed on one side (the east), so that the room is not sufficiently lighted on its side next to the recitation rooms (the west). The recitation rooms are sufficiently lighted, not extending as far westward as those in the Fogg building. The staircases are front and rear, each with its adjacent entrance hall.

The play-grounds are abundantly large, but half of the space fails to be utilized, partly on account of being very rough ground, and partly through the excessively bad arrangement of the privies, which keeps the back grounds constantly deluged with the drainage from them and the urinaries. I am happy to say that in a conference with the city board of education, I urged the necessity of immediate action in this matter, and a committee was appointed to take it in hand with powers of immediate action. The difficulty has been that vaults are forbidden in the city by a municipal enactment, and sewerage is not within reach. I think that a system of tubs or buckets, with dry earth and lime, will be adopted.

Another matter was presented to the attention of the board, with the concurrence of Prof. Kellog, the superintendent, the expediency of the half time arrangement for little children. Clarksville is now the only city in Tennessee out of the six which I have visited, where the exploded practice is kept up of retaining the primary grades in school through the whole five hours of the school system; all the other schools divide the primary grades into two sections, one of which attends in the morning, the other in the afternoon. I think the half time system will be adopted at the close of the present half session in February, 1885.

COLORED SCHOOL BUILDING.

This also is placed on a large lot on the north side of Franklin street, near the boundary line of the incorporated city. The dimensions of the lot are 167 feet front by 375 feet in depth, giving ample space for all requirements, slanting from the streets downward to the back. The building is of brick, containing two stories and a basement, the elevation as follows: Basement, eight feet six inches; first floor, fourteen feet; second floor, fourteen feet six inches. Each story consists of a stair-hall ten by twenty-six feet, and a school-room twenty-eight by forty-three feet. The basement has a coal cellar under the stair-hall, and a school-room of the same dimensions as those above, except that a small recitation-room twelve feet nine inches square is separated from it. The rooms are well arranged for light and ventilation, but deplorably insufficient in dimensions for the numbers they have to accommodate, as will be manifested on comparing with the dimensions above stated the average attendance of the last month: Upper floor, 118; lower floor, 100; basement, 218 in two consecutive divisions; the number attending at one time, 327; cubic feet, 445.43; cubic feet to each pupil, 136.21.

I have said that the play-grounds are amply sufficient, but the back part of them (like those of the white schools already described) is rendered unavailable by the shocking condition of the privies draining towards that part of the lot.

I have computed the cubic feet of space allowed to a scholar in this school as a typical case. It appears to be 136.21, while the hygiene allowance is 400.

Not that this is a solitary case of overcrowding; the exceptions throughout all the State are where the normal proportion between space and numbers is observed. One such exception, and it is a rare one, is found in this same city in the case of the upper room of the Howard building, where the average attendance is seventy-six, and the cubic

feet 31920, giving to each scholar a space of 420 cubic feet. But this is only an instance out of many where the interest of the great body of the scholars is sacrificed to that of the higher classes.

Take, for instance, the middle floor of the same building: with less space (for while the area is the same, the room is a foot lower) the average attendance is more than double, being 169, and the ratio of space to a pupil 176 cubic feet; and in the lower floor, occupied by primary classes, the cubic feet being the same as in the third story, the average attendance for the same month was 209, making the average space something under 153.

GENERAL REMARKS.

It would be great injustice to Clarksville if it should be inferred (because I have dwelt specially upon the overcrowding of schools in that city) that its schools are any worse than the average of Tennessee schools.

I am in possession of the figures to show that there is not a school building in Tennessee in which there is not a larger number of scholars taught than the capacity of its buildings justifies on the plainest hygienic principles. I now go further, and contend that not only does the number of scholars transcend the space assigned them, but it is too great for the number of teachers to instruct, consistently with good teaching and mental and bodily health. To provide against misconception in this respect, I will take some figures from my observations in three of the most considerable cities of the State, namely Knoxville, Chattanooga and Memphis.

The proportion of scholars to teachers in these schools may be thus tabulated :

	TEACHERS.	SCHOLARS.	AVERAGE.
Chattanooga.	■	2,294	53
Knoxville.	48	2,243	47
Memphis.	71	3,475	49
Total.	162	8,012	49

At first sight, this does not appear a very alarming excess over the number allowed to a teacher by writers on education, who give forty children to a teacher as the maximum ratio ; but this does not represent anywhere near the number taught by most of the teachers, for in this respect, also, the high school is pampered at the expense of the lower departments. As many teachers are allowed for the ninth and tenth grades as for the first and second ; and I have known a time when, in the schools where I was a member of the Board of Education, there were fifteen pupils all told in the ninth and tenth, while in the first alone there were over seventy.

Now, all the injuries which, in the body of this report, have been mentioned as prejudicial to the health of our public schools, are either created or greatly aggravated by overcrowding. There are too many scholars for the space allowed them, and for the number of teachers assigned them. And what is the remedy ? It is obviously a question of money. There are more children in our schools than there is adequate provision made for, either in the way of space or of teachers. More can not be done for them with the funds now available ; of that I have seen practical proof. In the Clarksville schools money has constantly had to be advanced by a member of the school board, who is a bank officer. In those of a much larger city, the

teachers have, for several months, at this time, remained unpaid. The plainest arithmetic shows them that *there must be either fewer scholars or more money*. The financial question is beyond the scope of this paper to discuss. I can only say that there does not seem to be much disposition on the part of the people to favor an increase of taxation, whether by the State or by municipal bodies. But the second question arises, can the number of children receiving education in the public schools be reduced? I think it can, by judicious retrenchment at both ends.

By the present law of Tennessee, children are admitted at the age of six. I believe that few who have studied the constitution of children, will say that it is good for either their mental or bodily health, to be turned into the vast crowds which frequent our public schools for the purpose of education. Let them pass their second dentition and acquire that degree of constitutional stamina which follows that process—in other words, let them attain their eighth birth-day at home, picking up such little knowledge of their letters as can be acquired there, and then go to school, even though they will be at first not so advanced as the children who commenced at six. Now, to place the school age at eight instead of six, would be to cut off the two first grades, which constitute over thirty per cent. of the children in school. Now, to consider the other end of the educational scale—the high school. In the schools more immediately under my observation, out of 453 children, the tenth and eleventh grades, which constitute the high school, comprise twenty-one scholars, of whom seventeen are in the ninth grade, and four in the tenth; to put this into an arithmetic statement, less than one-twentieth of the pupils in the school employ more than one-fifth of the teaching force, each individual of the high school employs four times as much teaching force as a child of the lower classes, and that of a higher and more expensive quality. In general terms, it may be said that it costs six times as much to teach

a pupil in the high school as one in the lower grades. And I have satisfied myself that about the same ratio prevails in other cities.

But now the inquiry arises, who are the scholars who absorb so disproportioned a share of the school space and school teaching? As regards the boys, the question is soon answered—there are, virtually, none there. In the high school classes of Clarksville, the tenth grade consists of four girls and no boys; the ninth grade, seventeen in all, has, I know, a preponderance of girls, let us say ten girls and seven boys. I have not the figures before me, but I am certain that the ratio is not far from the truth. It is easy to see why this is the case. The average boy who attends the public school has to finish his education at an age varying from twelve to fourteen; after that he has to go to work and make his living; in other words, he stops at the sixth, seventh, or eighth grade, and the few who make their way into the ninth (in this instance about seven out of 226), are those whose parents' circumstances do not compel them to work for a living, which is good evidence that they can afford to pay for an exceptional education for their children, if they desire one. Leaving out these seven boys, then, and we have the whole expense in teaching force and building space of the high school expended in giving *fourteen* girls a smattering of trigonometry, rhetoric, and *the* 'ologies.

Of course, this is only the state of things in a moderate *ized* town, but in higher terms the same ratio prevails *verywhere* else. Take, for instance, the high school *asses* who occupy the two upper rooms of the Fogg *ilding* in Nashville, and their numbers are not greater *proportion* to those which swarm the twelve other school *ildings*, and the ground floor of the Fogg building itself, *an*, our fourteen girls and seven boys to the 433 other *nite* scholars at Clarksville.

*O*ur remedy, then, for the overcrowding, which is now

injuring the health of our children, is to raise the school age from six years to eight years, and to abolish the high schools. I know that this will be opposed by many. The other alternative is to double the school tax.

To recount, however, the principal needs of the city schools I have visited, so far as they can be briefly stated, they are :

First. Special means of heating independent of stoves.

Second. Closely associated with this, and mainly dependent on it, special provision for ventilation, independent of windows.

Third. Larger play-grounds, or in defect of these, provisions for gymnastic exercise.

Fourth. A dinner recess of three hours.

Fifth. Smaller number of scholars to a teacher in the primary and grammar schools.

Sixth. Careful provision for the removal of excrement.

Seventh. Above all, MORE SPACE.

And all these things require money.

PHYSICAL TRAINING
AT THE
STATE NORMAL COLLEGE GYMNASIUM.
—
LADIES' DEPARTMENT.
—

BY MARY E. W. JONES, DIRECTOR.

The question of the physical education of women is now deemed no less important and worthy of consideration than that of the higher or mental faculties, for a healthy brain depends upon good lungs and good digestion, and these upon good air and food, and all depend upon good muscular condition.

The gymnasium, with its appliances and apparatus properly arranged, and under skillful direction, is the best training-school for the body. It gives it just that kind and amount of exercise needed to keep it in the best working order, whether the work be mental or physical. It can make up for physical deficiencies caused by one-sided occupations, as well as help to guard against the development of inherited tendencies. For physiological reasons, the physical training of girls should be carried on with the greatest amount of care during the growing years.

The gymnasium connected with the State Normal College, known as the "Ewing Gymnasium," was completed last season, and dedicated with appropriate exercises at the close of the school year. The main room is ninety feet long, thirty feet wide and twenty-five feet high, with abundant provision for ensuring sunlight and pure air, a very important consideration in the construction of a gymnasium. The dressing rooms have proved hardly adequate

to the large number in attendance, and it is hoped that measures will soon be taken for enlarging them, and for adding to them bathing facilities.

The system is the same as that practiced by Dr. D. A. Sargent, professor of physical training at Harvard University, both in the college gymnasium and in his private gymnasium for women and children, and is based upon a thorough examination and a practical strength test. From the data obtained, the course of training is prescribed that is best calculated to meet the needs of the individual. The aim is to leave no muscle undeveloped, but to furnish exercise for each part of every limb, and all parts of the body, thus securing symmetry and general strength. The apparatus, which is as complete as possible, was selected by Dr. Sargent, and consists of his inventions for special exercises, together with rowing machines, Indian clubs, dumb-bells, wands, ropes, rings, bars, etc. There is also a walking track. Each piece of apparatus is adjusted by weights corresponding to the strength of the individual using it; the weights and number of movements being increased as increased strength demands.

The work is under the constant supervision of the teacher in charge, and care is taken that no one shall overwork. If by accident, or prompted by ambition, a young lady has put into her weight box more weights than she can easily use, the fact is made apparent by her movements, and attention is at once called to the fact.

At the close of the term, the strength tests are again taken, and each young lady receives a card showing the gain of strength in different sets of muscles, the chest development and lung capacity.

If any of the young ladies are kept from school on account of sickness, it is the duty of the lady director of the gymnasium to visit them, and, if it is thought advisable, to call a physician.

VITAL STATISTICS IN TENNESSEE.

A REPORT

BY

J. D. PLUNKET, M. D.,
OF NASHVILLE, TENN.,

MEMBER OF THE STATE BOARD OF HEALTH AND ITS COM-
MITTEE ON VITAL STATISTICS.

VITAL STATISTICS.

To repeat and here reproduce the argument showing the value and essential importance of vital statistics in the proper administration of all enlightened government, either in its social, economic or hygienic aspects would, it is believed, be wholly a work of supererogation.

Four years ago your committee, in their last report upon vital statistics,* presented briefly, but as far as it related to sanitary science it was thought sufficiently, the argument upon the subject, and therefore at this time will add nothing more in that way, but assume that the intelligent everywhere concede without hesitation the far-reaching importance of vital statistics, and their great value when accurately collected and preserved and properly interpreted. As an illustration of the serious embarrassment and cruel injustice which often arises from their absence, the following letter from a gentleman living in West Tennessee, and which we clip from the *Memphis Appeal*, Feb. 27, 1883, gives specific details of actual facts as they occurred under his own immediate vision and personal experience:

"REASONS WHY THE LEGISLATURE OUGHT NOT TO REPEAL THE VITAL STATISTICS LAW.

"The enclosed letter was sent to a member of the Legislature which passed the vital statistics law it is now proposed to repeal. The reasons I therein advanced for it are as pertinent now as then, and I therefore ask you to lay it before your readers in the hope that it may receive the attention of the members from Shelby county and induce them to see how essential the vital statistics law is, at least to our adopted citizens.

F. W. BUTTINGHAUS."

"THE LETTER REFERRED TO.

"I take the liberty to propose to you that, to prevent in future many difficulties and embarrassments to our adopted citizens and their heirs in

* First Report State Board of Health, page 167.

regard to inheritance from the old world, a law be passed that the county clerk, or some other person duly authorized by law, keep the following authoritative register, namely :

1. Of all marriages in the respective county, with (a) full names, (b) place of birth, (c) the names of the parents of the contracting parties, (d) the officer or parson who performed the marriage, the date thereof, etc.

2. All births of children, their names, names of father and mother, date and place.

3. All demises, date, name, birthplace, age, disease, name of attending physician or name of coroner, undertaker, date, and place of interment, etc. This law may be made obligatory to all citizens, and any failure thereof be considered a misdemeanor and punished by a fine, etc. The clerk or other lawful person should be entitled for each registration 25 cents, to be paid by the interested parties.

Such a law exists, as you know, in Europe, and that the enactment of such or a similar one here is doubtless very expedient, and in many instances very profitable to our citizens, and the failure of the existence of the same very damaging to some of our citizens. Allow me to mention a few cases which have come under my observation.

A widow lady in South Memphis received notice from Germany that the father of her late husband had died, and her and her children's share of inheritance was at their disposal if she would send the necessary documents of marriage, legitimacy of her children, etc. Now, her marriage license was lost ; she was married some twenty years ago in New Orleans by a justice of the peace, the name of whom she did not remember ; neither did she know in what district she had been married, as she had left Louisiana shortly after said marriage. I have written several times to the authorities of Louisiana, but the record could not be found. Although we proved by affidavits of several persons that she and her deceased husband had lived here in Memphis for many years, and always as man and wife ; that the man declared her to be his lawful wife, and that the children were his. But all in vain. The German authorities wanted legal documents, not only of the marriage, but also of the legitimacy of the children, which we could not produce, as there does not exist such a record. And thus the matter stands to-day, and neither the widow nor her children can obtain the money, which amounts to several thousand dollars.

Another case is that with Mrs. Suechten, whom you know. Her father and mother are both dead. She is entitled to her parents' heritage, but she has to produce the documents of legitimacy. The physician and midwife who attended her mother at her birth are both dead, but fortunately I found a few old citizens who had known her since she was a baby, and especially an old lady who was present at her birth. (I will here state for Col. Patterson, that the matter will come to a close now, as I have been informed, after nine or ten years trouble and accruing heavy expenses.)

There are many other cases in my charge which cause me great trouble and the people heavy expenses. To prevent this, and also for the reason that the money should come into our country without fail or delay, I think it highly expedient that such a law as above indicated should be enacted, as it is neither expensive to the country nor the people, nor is it troublesome or oppressive to any fair-minded person

F. W. BUTTINGHAUS."

Many similar instances could be given, and as we become more populous as a State they will become necessarily more numerous, and the ends of good government, consequently more hopelessly involved, without some such law, and since a beginning must be made in this direction, the query naturally arises, why not make it now?

Again, aside from the vexatious delays and great injustice often imposed upon the individual, in not being able to supply him or her, as the case might be, with data which could be obtained from a carefully kept register of vital statistics alone, communities, from the same want of exact information, are also made to suffer through misrepresentation, thereby driving away immigration and capital, and retarding development and progress. Recently a case of this kind has come to light involving the reputation of half a dozen of the wealthiest counties in Tennessee, the greater number of which possess, in an eminent degree, the essential conditions of health, such as an elevated, rolling surface, thus securing the best of natural drainage, an abundant supply of the most wholesome water both for man and beast, a soil rich in its yield of the greatest variety of crops; and inhabited by a hardy, long-lived, intelligent and thrifty people.

At a meeting of the State Board of Health, held in Nashville on April 1 and 2, 1884, we find in the written report of the Secretary, made upon that occasion, the following statement:

"Judge Pitkin C. Wright, agent for Tennessee of the Hartford Life and Annuity Insurance Company, has referred to this office a letter from his company instructing him not to issue policies in the counties of Bedford, Gibson, Henry, Robertson, Rutherford, and Sumner. The question is

submitted to the Board whether those counties show an unusually heavy death rate. If not, such instructions are detrimental to the reputation of said counties."

The following are the letters referred to, with an extract from the minutes of the Board of that date :

"OFFICE OF TENNESSEE AGENCY FOR THE HARTFORD LIFE
AND ANNUITY INS. CO., NASHVILLE, TENN., Mar. 29, 1884.

"C. C. Fife, M.D., Secretary State Board of Health :

DEAR DOCTOR—The enclosed letter from the officer mentioned of the above company, giving some reasons for their refusal to accept risks from certain counties, is evidently based on erroneous or mistaken information. Will you do me the great favor to bring the matter therein contained to the attention of the State Board, as it is a matter affecting the vital statistics of the State, and I would like their opinions thereon.

Yours truly,

PITKIN C. WRIGHT, Agent."

"OFFICE HARTFORD LIFE AND ANNUITY INSURANCE CO.,
HARTFORD, CONN., March 1, 1884.

"Pitkin C. Wright, Esq., Nashville, Tenn.:

DEAR SIR Your communications upon the subject of prohibited counties in Tennessee are before me for the purpose of making explanation of the cause of our action.

That you may know that our action is not without due warrant in the premises, we have to say that we have in hand the combined experience of American Companies in your State, and the facts show as follows

The six counties of Bedford, Gibson, Henry, Robertson, Rutherford, and Sumner, show among insured lives a death loss of \$158,300, while the tabular mortality, corresponding to the amount at risks, shows that the loss should have been only \$68,105. Hence, showing more than double the loss that there should have been—in fact, \$136,212 more than the policy-holders in that group of counties paid or contributed towards mortality. Now, look at the experience in the three counties of Shelby, Fayette, and Obion, the mortality of which is to be attributed, in a great degree, to the specially excessive mortality of the Memphis district. These three counties, in fact, show a trifle better than the group of six before mentioned, viz. \$1,521,016 actual mortality to \$701,683 tabular mortality, while the balance of the State shows only \$582,805 actual mortality to \$613,859 tabular mortality, showing, conclusively, that if you leave out the nine counties named, the experience was good; in fact, did not quite equal the tabular mortality.

We have laid these facts before you—and they are actual facts gathered together from actual experience alone—to show that we are not acting through the influence of any wild guess-work in prohibiting work in those counties.

You are an intelligent, reflecting man, and if you sat here called upon

to exercise a proper control in the selection of risks, you would feel, as we do, forced to govern the action by the coincidence in hand. It does not seem to us that the experience can be called accidental, and be treated as unlikely to recur, for it exhibits figures of sufficient size to warrant the conclusion that it is the rule and not at all accidental. We can not afford to disregard any danger signal that stares us so vividly in the face.

Yours truly,

STEPHEN BALL, Sec'y."

"The above letters were upon motion referred to the 'Committee on Vital Statistics,' and upon which they submitted the following report:

"To the President and Members of the State Board of Health:

GENTLEMEN—After considering the communication of the Hartford Life and Annuity Insurance Company, bearing date of March 1, 1883, and addressed to Pitkin C. Wright, Esq., Nashville, Tenn., referred to your committee, they respectfully report that the action of said company in prohibiting the taking of risks in the counties of Bedford, Gibson, Henry, Robertson, Rutherford and Sumner is, to say the least, most extraordinary, inasmuch as the pretext for such action is stated to be the heavy mortality among the inhabitants of said counties. Now, as a matter of fact, the death rate of these counties is well known to be that of the average of any of the Middle States, while that of a large majority of the counties named is about the same, if not below the death rate of many of the so-called salubrious districts of America. The explanation, then, of the remarkable figures presented by this company in their communication, must be sought for rather in their methods of business—in the possible reckless taking of risks which may have been pursued by them in the counties named.

Again, your committee would submit for your consideration the accompanying letters from the State Manager of the Aetna Life Insurance Company, and from the local agents of the Mutual Life Insurance Company, of New York, both of which companies rank at least as the peer of the Hartford Life and Annuity Insurance Company, and are, your committee believe, equally as scrutinizing of the applicant and his environments as has become the Hartford company in taking risks, and which communications show that "the combined experience of American companies in your State" has not caused them to prohibit taking risks in either Bedford, Gibson, Henry, Robertson, Rutherford or Sumner counties.

All of which is respectfully submitted,

J. D. PLUNKET,

Chairman of Committee on Vital Statistics.

April 2, 1884 "

"NASHVILLE, TENN., April 2, 1884.

"*Dr. J. D. Plunket, Chairman:*

DEAR SIR—In reply to your inquiry as to whether the Mutual Life Insurance Company does business in the counties of Bedford, Gibson, Henry, Robertson, Rutherford and Sumner, of this State, we say that this company does insure lives in every county in the State, but in that portion west of the Tennessee river an additional charge is made during the epidemic season.

Very respectfully,

GALE, THOMAS & SHARPE, *Agents.*"

"NASHVILLE, TENN., April 2, 1884.

"*J. D. Plunket, M.D., Chairman:*

MY DEAR SIR—In answer to your inquiry of this date, as to whether or not the Aetna Life Insurance Company does business in the counties of Bedford, Gibson, Henry, Robertson, Rutherford and Sumner, of this State, would say it does, and in all other counties of the State, except counties bordering on the Mississippi river, and in such counties at extra rate, of about one-fourth increase of rate.

Yours respectfully,

W. D. TALBOT, *Manager.*"

"The report of committee was received and adopted."

It was to prevent similar and further injustice to the individual by inaugurating a system of registration for the State at large, through which he or she could, without unnecessary delay or annoyance, be for the future supplied with the legal information often required for the just distribution of property, to be able, with incontrovertible facts, to meet all efforts to decry our commonwealth by misrepresentation as regards its healthfulness in part or in whole, as indicated in its death rate, and more, that your committee formulated with much care four years ago a bill to provide for the registration of births, deaths and marriages in Tennessee. In suggesting and presenting this proposed bill, the committee prefaced it with the following language:

"To the end, therefore, of aiding in the intelligent accomplishment of such an object, and facilitating the enactment of a law so desirable, the following outline of a law has been carefully worked out, and is respectfully submitted, as embracing the minimum of detail, which any system of registration to be valuable must possess, and,

while this outline will at a glance appear, as it is, defective, and in some particulars even crude, yet, as an educational means—as a first step in this direction by our State, it is believed it will prove the part of wisdom to adopt it, rather than attempt too great detail, or strive after too great perfection at the beginning, for such a course, as is shown in the experience of other States and countries, has invariably been followed by most discouraging results, if not an entire failure. The people must be gradually brought to an appreciation of this subject, and must be encouraged to the formation of the habit of reporting for registration, and permanent preservation among the municipal, county and State archives, the three most important events of human life, viz.: birth, marriage and death, and as this object is realized, the law from time to time may be perfected by amendment in such particulars as experience may dictate as either necessary or desirable, and in addition, the execution of the law, which in many localities has been found exceedingly difficult, will thereby be rendered easy and effectual, a feature of the first importance, as such registration will in consequence be of greatly increased value as it is made to approximate completeness.”*

“REGISTRATION LAW SUGGESTED.

“*AN ACT to provide for the registration of Births, Marriages and Deaths in Tennessee.*

“SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee,* That every justice of the peace, minister of the gospel, and all other legally authorized persons solemnizing marriage in this State, shall make a record of each marriage so solemnized by him, together with all the facts relating to the same, as required by the fifth section of this act; and such justice, minister of the gospel, or other person, shall, at the time such marriage is solemnized, deliver on demand to either of the parties so joined in marriage as aforesaid, a certificate of such marriage, containing all the facts in relation thereto required by said fifth section of this act; and shall, within (30) thirty days thereafter, deliver to the clerk of the County Court of that county in which such marriage took place, a certified copy of such record.

“SEC. 2. That every physician, surgeon, or midwife, who may be in professional attendance at any birth or death in this State, or in the absence of any or all of the aforesaid parties, the head or senior member of said household wherein said birth or death occurred, shall, within thirty (30) days thereafter, file a written statement, duly certified to, of the fact, together with such other facts pertain-

*First report of the State Board of Health, page 230.

and every thirty days make
of the county in which such
such record.
any person in this State to keep
quest held in his district
if such inquest he shall
county wherein said cor
record, giving all the
other deaths.
Court clerks of the
the returns of such
at length in sepa-
that purpose by the
births, marriages and
order in which they
of marriages shall be
groom and bride. The
the date of the birth,
sex and color of the child,
name of both parents, the
of the parents, the occu-
the record was made; *Pro-*
such name shall
books held wherein each
attention has been
justice of the peace, who
such christian
as the christian
and shall be properly

date when such record was made. The record of death shall state, in separate columns, the date of the death, the christian and surname of the deceased, the sex and color, whether married or single, the age in years, months and days, the place of death, the disease or apparent cause of the death, the nativity of the deceased, and the occupation, if any, and the names and residence of the parents, and their relationship, if any, and the date when such record was made. The clerk of the County Court of the several counties shall annually, on or before the first day of April, make and transmit to the Secretary of State a certified copy of the records in his office of all the births, marriages and deaths reported in their respective counties for the year ending December 31st last preceding, and each County Court clerk shall receive for the record of each birth, marriage and death in his office three cents and three cents for each birth, marriage and death returned by him to the Secretary of State, to be paid by the county upon the presentation of a certificate from the Secretary of State that the duties herein imposed upon said County Court clerk have been performed, and shall be compensation in full for all the services required by this act to be performed by him.

SEC 6. It shall be the duty of the Secretary of State to receive the returns made in pursuance of the fifth section of this act, and he shall cause the same for each year to be bound together in one or more volumes at the expense of the State, and make indexes thereto, and with the assistance of the Secretary of the State Board of Health, who is hereby constituted *ex officio* the Superintendent of Vital Statistics, shall prepare such tabular statements, results, and deductions therefrom as will render them of practical utility, and make reports thereof annually to the Governor of the State, which report may be ordered published and distributed in such manner as the Legislature may from time to time direct.

SEC 7. Nothing contained in this act shall be so construed as interfering with the manner adopted by any municipality in this State for collecting such vital statistics, and it is hereby made the duty of such municipal authorities to cause to be made once in every thirty days a transcript of such municipal records, which, after being duly certified to, they shall cause the same to be delivered to the clerk of the County Court in which county said municipality is located.

SEC 8. In case of the refusal or neglect by any of the officers or individual mentioned in this act to perform any of the duties hereinbefore required of them, or either of them to be done and performed by any of the provisions herein contained, such officer or person shall be guilty of misdemeanor, and upon conviction, shall

be fined not less than five dollars nor more than fifty dollars, and the prosecuting attorney in each county or judicial district is hereby required to prosecute in the name of the people of the State of Tennessee all persons in his county or judicial district who shall be guilty of a violation of this act.

“SEC. 9. *Be it further enacted*, That all acts or parts of acts coming in conflict with this act, are hereby repealed, and that this act shall take effect from and after its passage, the public welfare requiring it.

A copy of this bill was introduced, by request, in the Senate of 1881, by Hon. Samuel Watson, Senator from Davidson county, who with intelligent zeal aided greatly in effecting its passage in due time through the Senate. On March 30, 1881, having passed the House of Representatives, it received the signatures of the Speakers of both houses, and was transmitted to his Excellency Governor Alvin Hawkins for approval. Upon the theory that because the Act as passed took “effect from and after its passage,” etc., it might, because of the shortness of notice, work a hardship upon some one, the Governor at once expressed his purpose of vetoing the bill. Thus the matter stood in the balance of uncertainty for several days, and until the meeting of the State Medical Society, which occurred in Nashville on April 5, 1881. The following is an extract from the published minutes of the Society:

“The following resolutions were offered by Dr. Plunket and adopted:

“*Whereas*, This association in 1848, 1854, 1860, and 1868, through able committees, memorialized without success the Legislature upon the importance of enacting a law for the registration of births, marriages and deaths in the State; and,

“*Whereas*, The State Board of Health has finally succeeded in inducing the present Legislature to pass a most excellent bill upon this subject, which we learn the Governor is hesitating about approving because of a technical objection which, in our opinion, is practically of but little effect; therefore, be it

“*Resolved*, That the defeat of a measure of such paramount importance would, in the course of current events, be but little less than a public calamity.

Resolved, That a committee of five be appointed to wait upon His Excellency at once and urge upon him the expediency of allowing the bill to become a law.

"The following committee was appointed under this resolution :
 Drs. W. P. Jones, D. D. Saunders, W. R. Sevier, Thomas Menees,
 and J. F. Grant."

"The committee, after interviewing the Governor, reported the following preamble and resolution, which, after adoption, the committee again waited upon His Excellency and notified him of the society's action, whereupon the Governor consented to sign the bill :

Whereas, The Governor feels a delicacy in signing the bill providing for the "registration of births, marriages and deaths," because it inflicts penalties for neglect of duty "from and after its passage," and many are ignorant of the passage of said bill ; there-

Resolved, That the State Medical Society recommend that the fines of the bill inflicting penalties shall not be enforced for the period of forty days from and after its passage

" W. P. JONES,	} Committee.
" J. F. GRANT,	
" D. D. SAUNDERS.	
" THOS. MENEES "	

Thus upon a recommendation by the State Medical Society that a definite time be allowed to elapse before the bill should practically go into operation, at least so far as the feature of imposing fines for non-compliance with its requirements was concerned, the Governor approved the same, and the bill, as originally drawn by your committee, became a law on April 5, 1881.

At once, with commendable zeal, so far as your committee had opportunity for judging, the county authorities, especially in the more populous counties, began the work of providing the necessary record books, stationery, etc., that the registration might be begun with the least delay and confusion possible. Would that as much might be said regarding all the county authorities in the State. The State Board of Health had immediately printed ten thousand copies of the law, and had it mailed to every magistrate, minister of the gospel, coroner, physician, and, so far as their names could be obtained, the midwives throughout

the State. After a time the report began to be received that certain parties claimed, because the law required at their hands certain labor without providing compensation therefor, it was unconstitutional, and, consequently, any disregard for its provisions could not be legally enforced. The equity of this as an abstract proposition, we dare say, will be gainsaid by no one; but as the insignificance of the duty asked, and as it would have fallen in the execution of the law upon each magistrate or other party concerned, was so small, even trifling in the great majority of instances, in drawing the bill, the committee felt encouraged to hope that each one would contribute cheerfully that much without pay, in view of the great value of the end to be obtained.

From this cause, and, so far as we are informed, from this cause alone, there developed in a few localities this opposition, which became more or less pronounced as circumstances favored, and upon the convening of the Legislature of 1883, the following bill was introduced :

"A BILL to be entitled an act to repeal an act entitled ' An Act to provide for the registration of births, marriages and deaths in Tennessee.'

"SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That an act passed March 30, 1881, approved April 5, 1881, acts of 1881, chapter 112, entitled An Act to provide for the registration of births, marriages and deaths in Tennessee, be and the same is hereby repealed.

"SEC 2. *Be it further enacted*, That this act take effect from and after its passage, the public welfare requiring it."

This bill was enacted into a law upon March 28, 1883, in singular disregard and indifference to the protests of an enlightened public sentiment, which was reflected through the columns of a progressive and vigilant press, as, at a glance will be seen from the following extracts, clipped from the dailies of Nashville, Memphis, Chattanooga, and other points:

[Nashville Banner, February 24, 1883.]

"Two years ago, 'An Act to provide for the registration of births, marriages and deaths in Tennessee' was placed upon the statute books. The value and far reaching importance of such a law was hailed by the more enlightened of our citizens as a step of unquestioned progress, as by such a registry often is the just and legal distribution of property facilitated, and the influence of civilization, occupation, locality, and other physical and social agencies operating upon our people brought out in a most clear and profitable manner. Such registration would teach us every day that which every day should be brought to our knowledge, that we may and do in a large measure weave the web of our own life, that death being for the most part the result of influences by which we are surrounded, we have it greatly in our power to make those influences conducive to life or to our destruction. Our habits either make or mar us. Our eating, our drinking, our clothing, our personal cleanliness, our schoolrooms, our church buildings, and even our legislative halls, the air and situation of our homes, our houses in their construction, material, arrangement for heating, lighting and ventilation their very newness, our occupation, our education, etc., all alike have an influence [for good or for evil, and all alike come strictly within the province, within the legitimate consideration of the vital statistician.

'It is by records such as are the result of this character of registration that we become informed how best to live, as well physically as mentally, and even morally, for it is now conceded by all civilized nations that there is an intimate relationship between health and morality, so there is just the same relationship between health and crime. Since, therefore, the end of government is the good of mankind, such laws have been given great prominence in the civil codes of all enlightened nations, and every facility has been by them provided by which such registration can be made most full and accurate.

"Hence the effort being made at this time to erase from our statute books this law must necessarily arise from a superficial view of either its value or scope, and as such a step would be no less in discord with the spirit of the hour than it must in its sequence prove but little short of a public calamity. we trust that the House will look well to this matter, and be slow, very slow, in adopting such a programme."

[Memphis Appeal, February 28, 1883.]

The *Appeal* very heartily endorses what the *Nashville Banner* says as to the necessity for the Vital Statistics Act which it is proposed to repeal. Put its enforcement in the hands of the coroner

of each county, who should be a doctor in good standing, and who also should be made the Health Officer of the county, and there will be no difficulty in carrying out its provisions. The business men as well as the medical men of the State ask this. They know the necessity for the act, and they, too, endorse what the *Banner* says so well in advocacy of it."

"A STEP BACKWARD."

[Nashville American, February 25, 1883.]

"The passage by the Senate, on Monday last, of a bill to repeal the law providing for the registration of births, marriages and deaths in Tennessee, was unquestionably a great mistake, and must, unless killed in the House, prove in the future history of our State a prominent factor in retarding that social development and organization which the information to be derived from such vital statistics can alone afford. Lord Bacon stated tersely a truth when he said, 'the true greatness of a State consisteth essentially in the population and breed of men,' and how the one is to be augmented in numbers and yet maintained in the highest degree of physical and mental health and the other to be improved in quality, a moment's reflection must show, can alone be accomplished by first having accurate vital statistics. This department of statesmanship has always justly received large attention, and as a result to-day we find no civilized country in Europe is without its system of registration, as also have a large number of the States of the Union, and thus, instead of undervaluing the proper registration of every birth, death and marriage occurring within their respective boundaries, they have striven to make vital statistics the starting point for all statistics as to material conditions, and have largely increased the facilities for their securement. Tennessee cannot afford to do less. If, therefore, the present law be defective in any of its practical details, let it carefully be perfected, for objectionable as it may be, it by far is preferable in a high degree to no law at all upon that subject.

"VITAL STATISTICS."

[Nashville World, February 28, 1883.]

"The idea of life insurance is of modern conception, and as a business proposition has grown in our day to such magnitude as to be only rivaled by the railroad interests in the amount of capital invested. The State Insurance Commissioner in his last published report shows that the people of Tennessee for the year 1881 carried life insurance to the extent in round numbers of \$13,000,000, and paid out in actual money during the same time about \$300,000 in premiums, while for the country at large, taking an average of the

past twenty years, we find the enormous sum of nearly \$100,000,000 has been paid upon similar risks per annum, thus showing it to be one of the largest and most important branches of mercantile interests of the whole country. What is the basis upon which this enormous investment of money is made? We answer, it is dependent wholly upon the calculation of probabilities and of expectations of life which have had their origin and development through vital statistics, or in a word, an accurate registration of births, deaths and marriages. These expectations of life or probabilities have, up to a recent time, been deductions made from the "Carlisle tables," which were compiled from English statistics about one hundred years ago. Now, it is conceded by all well informed actuaries that the insurance rate of one period is inapplicable to that of another. Yet, from want of statistics showing our own life line, temperament, social conditions and climate, our people are thus compelled to pay a rate of premiums, for life insurance, probably from twenty-five to thirty-five per cent. higher than the facts would justify if the vital statistics of Tennessee were available. When the facts are recalled of the comparatively recent and excellent origin of our people, being composed as they are of the bone and sinew of Europe and of the East, the cheapness and abundance of good food, the marked salubrity of our climate, all prime factors as life elements, we feel assured in affirming earnestly that if Tennessee had a perfected system of vital statistics the average of human life would be found much greater than in England or the Eastern States, and as a consequence the now heavy tax in the way of unjustly large premiums on life insurance would be materially reduced, resulting no doubt in the near future in a saving of not less than a half million or more dollars to our people annually.

"As this subject is now before the Legislature, the query arises shall we go forward and perfect a system by which the vital statistics of the State can be obtained and thereby avail ourselves of the improvements made in the methods of studying and tabulating such records the necessity of such tables for study of the laws of population and life insurance, the results attained from the systems already adopted in many countries, the greater knowledge of the course and causes of diseases, the ability which has been shown to limit epidemics, to prolong life, to prevent outbreaks of contagion and even abate crime, which the study of vital statistics has undeniably attested to be a few of the practical benefits attainable, or shall the first step taken by Tennessee two years ago in this matter, when the Legislature enacted a law 'to provide for the registration of births, marriages and deaths in Tennessee,' be retraced and this statute wiped out, and all these vital and growing interests be stultified by remanding them back to oblivion and chaos. In behalf of our rep-

utation as a live, progressive State we would sincerely hope not the latter."

"A PLEA FOR THE VITAL STATISTICS LAW."

[Chattanooga Times, March 10, 1883.]

"The following note to Dr. P. D. Sims, of our City Board of Health, explains itself:

HEALTH DEPARTMENT, CITY OF NEW YORK, BUREAU OF
VITAL STATISTICS, NEW YORK, Feb 1, 1883.

"Dr. P. D. Sims, Secretary Board of Health, Chattanooga, Tenn."

"SIR—I have the honor to submit the following vital statistics of New York City, for the year ending December 31, 1882, and would be thankful to obtain similar information relating to your city on the accompanying blank.

Very respectfully, your obedient servant,

JOHN T. NAGLE, M.D.,

Deputy Register of Records.

Population estimated July 1, 1882	1,279,560
Total Births reported*	27,321
Total Marriages reported*	11,085
Total Still-births reported*	2,658
Total Deaths	37,824
Total Deaths of Children under five years	17,520

Deaths were from the following causes:

Small-pox	259
Measles	913
Scarlet Fever	2,066
Diphtheria	1,525
Croup	729
Whooping Cough	658
Typhus Fever	65
Typhoid Fever	362
Cerebro-spinal Fever	238
Phthisis Pulmonalis	5,251
Pneumonia	3,472
Bronchitis	1,583
Diarrheal Diseases†	4,050
Diarrheal Diseases of Children under five years	3,479

"The above is a condensed vital statistic report of the city of New York, for the year 1882, showing a death rate of twenty-nine and a

*Incomplete.

†Include Cholera Infantum, Diarrhea, Cholera Morbus, Dysentery, Enterocolitis, Diarrheal Enteritis, and Gastro Enteritis.

fraction per thousand per annum, exclusive of small-pox. The death rate of Chattanooga for the same year, exclusive of small-pox, is twenty and a fraction per thousand, for the entire population. For the white population, which is the proper standard of comparison, the rate is fifteen and a fraction per thousand, fifty-one per cent. of the death rate of the city of New York—practically, one-half. There is not a town, city, or community in the State of Tennessee whose death rate year after year is not far less than that of New York City.

"And yet all life insurance in Tennessee, amounting now to hundreds of thousands of dollars annually, pays a much higher rate than is paid for the same risk in the city of New York, upon the sole ground that life is more uncertain in Tennessee than it is in New York.

"Population and capital are kept away from Tennessee because life here is considered less secure. And why so considered? For the simple and single reason that the world does not know us, that we are hermetically sealed, that we absolutely refuse to furnish to the world or even to ourselves any authentic information in reference to health, sanitary condition, inherent growth or mortality—anything pertaining to vital statistics.

"Two years ago our State Legislature enacted a vital statistics law—imperfect perhaps, and unsatisfactory in some respects, but a dead letter on the statute book, not because of imperfections probably, so much as because of a stupid lethargy or general indisposition to execute it through a want of proper education and enlightenment.

"Now comes another Legislature given to retrenchment and reform, and goes to work to amend, correct, vivify and utilize this important start in civilized and enlightened legislation? No, verily! On the contrary, it is proposed at one sweep to wipe away the law from the statute book—to go back again at one single stride into the impenetrable darkness of heathenish communities and populations. While we claim to be too poor to pay our debts or even the interest thereon, we shut out the lights of an enlightened civilization, and stubbornly close our doors to the avenues of health, wealth and intelligence.

"This is retrenchment; this is the gathering together that scattereth abroad. It is the penny wise and pound foolish—a watching at the spigot and wasting at the bung."

"VITAL STATISTICS."

[The Union City Anchor, March 2, 1883.]

"It is known to the most advanced in medical and sanitary science that largely more disease and human suffering can be prevented

than can be cured by the art or science of medicine. It is the hope of every enlightened philanthropist that the present General Assembly will not ignore the importance of this subject, but will, in the interest of our State's material wealth, the physical welfare, the intellectual and moral development of the present and future generations, permit the law enacted two years ago requiring the registration of births, deaths and marriages in Tennessee to remain undisturbed for two years longer, anyway, for as it is, if it accomplishes nothing else it educates our people in the importance of having registered the three epochs of life—birth, death and marriage."

Many other extracts of similar import could be added if it were thought necessary.

Tennessee, however, cannot, in this noonday of progress, afford longer to be without some such law upon her statute books; therefore, with the valuable lessons taught and experiences had in dealing with the law passed in 1881 before us, we are enabled, as a consequence, now to present the draft of a bill which, while it corrects the defects and deficiencies complained of, also retains all the essential features of the former act; and it is sincerely hoped it may commend itself sufficiently to the intelligence of the Legislature, about convening, to secure its enactment into a law at once. The draft suggested is as follows:

AN ACT to provide for the Registration of Births, Marriages and Deaths in Tennessee.

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee,* That every justice of the peace, minister of the gospel, and all other legally authorized persons solemnizing marriage in this State, shall make a record of each marriage so solemnized by him, together with all the facts relating to the same, as required by the fifth section of this act; and such justice, minister of the gospel, or other person, shall, at the time such marriage is solemnized, deliver, on demand, to either of the parties so joined in marriage as aforesaid, a certificate of such marriage, containing all the facts in relation thereto required by said fifth section of this act; and shall, within thirty (30) days

thereafter, deliver to the Clerk of the County Court of that county in which such marriage took place, a certified copy of such record; and for such service shall receive ten (10) cents for each marriage so returned by him, to be paid by the county in which such returns are made, upon the presentation of the said clerk's certificate that the said returns are as required by this act.

SEC. 2. That every physician, surgeon, or midwife, who may be in professional attendance at any birth or death in this State, or in the absence of any or all of the aforesaid parties, the head or senior member of said household wherein said birth or death occurred, shall, within thirty (30) days thereafter, file a written statement, duly certified to, of the fact, together with such other facts pertaining thereto as required in section five of this act, with the senior (by age) justice of the peace of the civil district in which said birth or death occurred; and for such service shall receive ten (10) cents for each birth or death so returned by him or her, to be paid by the county in which such returns are made, upon the presentation of the certificate of the said justice of the peace that the said returns are as required by this act.

SEC. 3. It shall be the duty of the aforesaid justice of the peace in each civil district in the State, on receiving the returns of such births or deaths, to record the same in a book, to be furnished by the county, properly ruled, in the order in which they are received by said justice, and once within each and every thirty days make and deliver to the County Court Clerk of the county in which such district is located, a certified copy of such record, and for such service shall receive ten (10) cents for the record of each birth and death so returned by him, to be paid by the county in which such returns are made, upon the presentation of the certificate of the said County Court Clerk that the said returns are in due form as is required by the fifth section of this act.

SEC. 4. It shall be the duty of every coroner of this State to keep in a bound book, properly ruled, and to be furnished upon application by the several counties of the State, a record of every inquest held in his district, and within thirty days after the holding of such inquest, he shall deliver to the County Court Clerk of the county wherein said coroner has jurisdiction, a certified copy of such record, giving all the facts as required in section five of the act for other deaths, and for such service shall receive ten (10) cents for the record of each inquest so returned by him, to be paid by the county in which such inquest is made, upon the presentation of the certificate of said County Court Clerk that the said returns are in due form as is required by this act.

SEC. 5. It shall be the duty of the County Court Clerks of the several counties in this State, on receiving the returns of such births, marriages and deaths, to record the same at length in separate books (well bound), to be provided for that purpose by the county, with proper indexes thereto. The births, marriages and deaths shall be numbered and recorded in the order in which they are received by the said clerk, and the record of marriages shall be indexed, using both the name of the bridegroom and bride. The record of births shall state in separate columns the date of the birth, the name of the child (if it has any), the sex and color of the child, the place of birth, the christian and surname of both parents, the residence and nativity, and kinship, if any, of the parents, the occupation of the father, and the date when the record was made: *Provided*, that in case the child had no christian name, such name shall be obtained and reported by the head of the household wherein such birth occurred, within thirty days after his or her attention has been called to the fact by the senior (by age) justice of the peace, who shall do so at once upon discovering the omission, and such christian name shall be distinctly designated in such report as the christian name

belonging to a child previously reported, and shall be properly entered by said justice in the blank left for such christian name in his book of record. The record of marriages shall state in separate columns the date and place of marriage, the christian and surname of the bridegroom and bride, if a widow, the color, age and place of birth of each, the residence of each at the time of marriage, the occupation of the bridegroom, and the name and official station of the person by or before whom they were married, the name and residence of at least two witnesses present at such marriage, and the date when such record was made. The record of death shall state, in separate columns, the date of the death, the christian and surname of the deceased, the sex and color, whether married or single, the age in years, months and days, the place of death, the disease or apparent cause of death, the nativity of the deceased, and the occupation, if any, and the names and residence of the parents, and their relationship, if any, and the date when such record was made. The Clerks of the County Court of the several counties shall annually, on or before the first day of April, make and transmit to the Secretary of State a certified copy of the records in his office of all the births, marriages and deaths reported in their respective counties for the year ending December 31st last preceeding, and each County Court Clerk shall receive for the record of each birth, marriage and death in his office three cents, and three cents for each birth, marriage and death returned by him to the Secretary of State, to be paid by the county upon the presentation of a certificate from the Secretary of State that the duties herein imposed upon said County Court Clerk have been performed, and shall be compensation in full for all the services required by this act to be performed by him.

SEC. 6. It shall be the duty of the Secretary of State to receive the returns made in pursuance of the fifth section of this act, and he shall cause the same for each year to be

bound together in one or more volumes, at the expense of the State, and make indexes thereto, and with the assistance of the Secretary of the State Board of Health, who is hereby constituted *ex officio* "the Superintendent of Vital Statistics," shall prepare such tabular statements, results, and deductions therefrom as will render them of practical utility, and make report thereof biennially to the Governor of the State, which report shall be published and distributed as other public documents of the State now are.

SEC. 7. Nothing contained in this act shall be so construed as interfering with the manner adopted by any municipality in this State for collecting such vital statistics: and it is hereby made the duty of such municipal authorities to cause to be made once in every thirty days a transcript of such municipal record, which, after being duly certified to, they shall cause the same to be delivered to the clerk of the County Court in which county said municipality is located.

SEC. 8. In case of the refusal or neglect by any of the officers or individuals mentioned in this act to perform any of the duties hereinbefore required of them, or either of them, to be done and performed by any of the provisions herein contained, such officer or person shall be guilty of a misdemeanor, and, upon conviction, shall be fined not less than five dollars nor more than fifty dollars, and the prosecuting attorney in each county or judicial district is hereby required to prosecute, in the name of the people of the State of Tennessee, all persons in his county or judicial district who shall be guilty of a violation of this act.

SEC. 9. That all acts or parts of acts coming in conflict with this act, are hereby repealed, and that this act shall take effect thirty (30) days after its passage, the public welfare requiring it.

TABLES.

From the returns which are on file in the office of the Secretary of State, the following tables have been prepared,

giving an abstract of the registration of births, marriages and deaths in Tennessee, thus showing, to some degree, the manner, as well as extent, to which this duty was performed through the twenty months of the law's existence—from the date of its going into effect up to January 1, 1883. The statistics thus presented, at a glance will appear, as they are, incomplete and otherwise imperfect and fragmentary; yet they contain much that is valuable, and, in their negative aspect, suggest a train of most profitable reflection to our law-makers, and to all well-wishers of our commonwealth. They suggest, and would have supplied, a basis, if the system could have been left undisturbed, upon which to have builded for the future, by amendment to the law from time to time, as experience indicated defects, or improvements were carefully thought out, and thus, gradually, a system of vital statistics for Tennessee would have been established, and could have been brought to perfection, as time will demonstrate it can in no other manner be done.

This, in brief, is the history, after an existence as an independent sovereignty for near one hundred years, of Tennessee's first and only effort, as a State, to collect and preserve her vital statistics.

In closing this report, your committee desire to express the hope that its next effort will be more successful, and when once begun, it will be continuous.

AN ABSTRACT of the Registration of Births in Tennessee, as appears from the returns filed in the office of the Secretary of State, covering the period of twenty months, during which the law operated, from May 1, 1881, to January 1, 1883, when it was soon afterwards repealed.

UNITED STATES CENSUS, 1880.				BIRTHS.									
The State and Counties.	Total Population.	White Population.	Colored Population.	Whole Number.	SEX.			PARENTAGE.					
					Male.	Female.	Unknown.	American.	Foreign.	Am. Father and Per. Mother.	For. Father and Am. Mother.	Unknown.	
Tennessee.	1,542,359	1,138,831	403,528										
Anderson.	10,820	9,917	903	72	41	31							
Bedford ..	26,025	18,536	7,489	197	104	93		196					
Benton ...	9,780	9,147	633	40	19	21		40					
Bledsoe ..	5,617	4,839	779										
Blount	15,985	14,273	1,712	355	165	190		354	1				
Bradley ...	12,124	10,258	1,866										
Campbell ..	10,005	9,571	434	174	81	93							
Cannon ...	11,859	10,696	1,163	120	55	65							
Carroll ...	10,019	9,385	634										
Carroll ...	22,113	16,524	5,579										
Chatham ...	7,956	6,295	1,661										
Clatsop ...	13,373	12,584	789										
Clay ...	6,987	6,588	399										
Cocke ...	14,804	13,361	1,447										
Coffee ...	12,894	11,164	1,730	75	39	35	1						
Crockett ...	14,109	10,493	3,616										
Cumberl'd ..	4,538	4,496	42	67	29	38							
Davidson ...	79,026	47,678	31,348	51	423	372	6	592	70	6			
Deatur ...	8,498	7,276	1,222	186	90	96							
DeKalb ...	14,813	13,600	1,213	239	137	102							
Dickson ...	12,460	10,229	2,231	41	21	20							
Dyer ...	15,118	11,206	3,912										
Fayette ...	31,871	9,633	22,238	174	89	85							
Fentress ...	5,941	5,838	103	57	30	25	2						
Franklin ...	17,178	13,646	3,532										
Gibson ...	32,685	23,540	9,145	176	79	97		166	2				
Giles ...	36,014	21,824	14,190										
Granger ...	12,384	11,555	829										
Greene ...	24,006	21,850	2,156	82	36	45	1						
Granly ...	4,592	4,154	438	11	11								
Hamblen ...	10,187	8,481	1,706	50	25	25							
Hamilton ...	23,642	16,239	7,403	109	57	50	2	108	1				
Hancock ...	9,058	8,616	442	102	45	56	1						
Hartman ...	22,921	13,313	9,608	130	62	64	4						
Hartman ...	14,793	12,775	2,018	31	160	150							
Hawkins ...	20,610	17,956	2,654										
Haywood ...	26,053	8,497	17,556										
Henderson ...	17,430	14,414	3,016	344	196	187	1	358	20				
Henry ...	22,142	15,488	6,654	147	84	63							
Hickman ...	12,095	9,849	2,246	179	92	80							
Houston ...	4,295	3,687	608	51	24	27							
Humphreys ..	11,379	9,708	1,671										
Jackson ...	12,008	11,575	433	348	182	163	3						
James ...	5,187	4,478	709										
Jefferson ...	15,846	13,339	2,507	9	5	4							
Johnson ...	7,766	7,295	471	177	90	87							
Knox ...	39,124	31,883	7,241	303	172	129	2	276	14	1	12		
Lake ...	3,958	3,374	584										
Laud'ale ...	14,918	9,081	5,837	70	36	34		52	12				
Lawrence ...	10,383	9,599	784	11	6	5							
Lewis ...	2,181	1,963	218	57	25	32		53	2	2			

a No report.

ABSTRACT OF BIRTHS—Continued.

UNITED STATES CENSUS, 1880.				BIRTHS.									
The State and Counties.	Total Population.	White Population.	Colored Population.	Whole Number.	SEX.			PARENTAGE.					
					Male.	Female.	Unknown.	American.	Foreign.	Am. Father and For. Mother.	For. Father and Am. Mother.	Unknown.	
Lincoln ...	28,960	20,642	6,317	396	220	176							
*London ...	9,148	7,382	1,766										
*McMinn ...	15,064	12,718	2,346										
McNairy ...	17,371	14,845	2,426	9	4	5							
Macon ...	9,321	8,429	892	58	27	29							
*Madison ...	30,874	15,406	15,468										
*Marion ...	10,910	9,541	1,369										
*Marshall ...	19,259	14,429	4,830										
*Maury ...	39,904	21,731	18,173										
*Meigs ...	7,117	6,303	814										
Monroe ...	15,283	12,991	1,292	17	8	9	1						
Morgan ...	28,481	14,786	13,695	68	32	36							
Moore ...	6,233	5,448	785	80	31	49	3						
Morgan ...	5,156	4,867	289										
Obion ...	22,912	18,841	4,071	17	10	7							
Overton ...	12,168	11,811	342										
Perry ...	7,174	6,609	565	89	61	28							
Pickett ...				96	52	44							
Polk ...	7,299	6,893	376										
Putnam ...	11,501	10,903	598	212	105	107							
*Rhea ...	7,073	6,300	773										
*Roane ...	13,237	13,310	1,927										
*Roberts ...	18,861	13,242	5,619										
Rutherford ...	36,741	20,248	16,493	606	328	275	2	542	38	9	16		
*Scott ...	6,021	5,884	157										
Sequatchie ...	2,565	2,509	56	18	11	7							
Sevier ...	15,541	14,848	693	133	56	77							
Shelby ...	78,430	34,508	43,922	225	117	108		191	23	5	6		
*Smith ...	17,799	14,215	3,584										
Stewart ...	12,690	9,933	2,757	184	97	87		181	3				
Sullivan ...	18,321	17,011	1,310	225	108	114	3	221	2			2	
Sumner ...	23,625	16,284	7,331	93	50	43							
*Tipton ...	21,033	10,482	10,551										
*Trousdale ...	6,646	4,505	2,141										
*Union ...	3,645	3,526	119										
Union ...	10,260	10,042	218	82	46	34	2	81					
*V. Buren ...	2,933	2,747	186										
Warren ...	14,079	11,801	2,278	16	6	10							
*Wash'ton ...	16,181	14,604	1,577										
Wayne ...	11,901	10,232	1,669	221	126	95							
Weakley ...	24,538	20,125	4,413	14	8	5	1						
White ...	11,176	10,173	1,003	145	76	69							
Willi'm's ...	28,313	15,922	12,391	139	82	51	6						
Wilson ...	28,747	20,292	8,455	54	28	26							

* No Report. † County formed since census of 1880 was taken.

AN ABSTRACT of the Registration of Marriages, as appears from the returns filed in the office of the Secretary of State, covering the period of twenty months, during which the law operated, from May 1, 1880, to January 1, 1883, when it was soon afterwards repealed.

UNITED STATES CENSUS, 1880				MARRIAGES.								
The State and Counties.	Total Population.	White Population.	Colored Population.	Couples.	NATIVITY.						Color.	
					American.	Foreign.	Am'n Male and Female.	For'n Male and Female.	Am. Female.	Unknown.	White.	Colored.
Tennessee	1,542,359	1,138,831	403,528									
Anderson	10,820	9,917	903	59	58					1	51	8
Bedford	26,025	18,536	7,489	155	155						117	38
Benton	9,780	9,147	633	71	71						68	3
Bledsoe	5,617	4,838	779									
Blount	15,983	14,273	1,712	210	210						189	21
Bradley	12,124	12,258	1,866									
Campbell	19,005	9,571	424	256	256						244	12
Cannon	11,859	10,696	1,163	90				82		8	59	13
Carter	10,019	9,395	624	72	72							
Carroll	22,103	16,524	5,579									
Cheatham	7,956	6,295	1,661									
Clairborne	13,373	12,584	789									
Clay	8,987	8,598	389									
Cocke	14,808	13,361	1,447									
Coffee	12,894	11,164	1,730	175	175						167	18
Crockett	11,109	10,433	3,616									
Cumberland	4,538	4,496	42	90	90							
Davidson	79,026	47,678	31,348	192	192							
Deatur	8,498	7,276	1,222	132	132						120	12
DeKalb	14,813	13,660	1,153	100	100						91	9
Dickson	12,460	10,229	2,231	55	55						49	6
Dyer	15,118	11,206	3,912									
Fayette	31,871	9,638	22,233	307	296	1				10	18	118
Fentress	5,941	5,838	103	48	48						4	4
Franklin	17,178	13,646	3,532									
Gibson	32,685	23,540	9,145	188	187	1					178	10
Giles	36,614	21,824	14,790	285	285						187	98
Granger	12,384	11,555	829									
Greene	24,005	21,850	2,155	130	130						114	16
Grundy	4,592	4,154	438	30	29	1					28	2
Hamblen	10,187	8,481	1,706	163	161	2					138	25
Hamilton	23,642	16,239	7,403	214	203	10				1	147	66
Hart	9,098	8,616	482	56	56						50	6
Hardeman	22,921	13,313	9,608	221	217	4					124	97
Harden	14,793	12,775	2,018	176	176						154	22
Hawkins	20,610	17,956	2,654	406	306						263	43
Haywood	26,053	8,497	17,556									
Henderson	17,430	14,414	3,016	275	275						243	32
Henry	22,142	15,483	6,659	294	294						219	75
Hickman	12,095	9,849	2,246	180	180						148	32
Houston	4,295	3,487	808	14	4					10	9	5
Humphreys	11,379	9,708	1,671									
Jackson	12,008	11,575	433	197	197						187	10
James	5,187	4,478	709									
Jefferson	15,845	13,319	2,526	43	48						39	4
Johnson	7,766	7,285	481	211	211						147	64
Knox	39,124	31,880	7,244	831	817	7				7	486	145
Lake	3,963	3,274	689									
Lauderdale	14,918	9,081	5,837	283	263					20	192	91
Lawrence	10,383	9,599	784	21	21						19	
Lewis	2,181	1,963	218	49	49						44	
Lincoln	26,960	20,643	6,317	436	432	2					335	1

* No report.

ABSTRACT OF MARRIAGES—Continued.

UNITED STATES CENSUS, 1880.				MARRIAGES								
The State and Counties.	Total Population.	White Population.	Colored Population.	Couples.	NATIVITY.						Color.	
					American.	Foreign.	Am'n Male and For. Female.	For'n Male and Am. Female.	Unknown.	White.	Colored.	
London	9,148	7,382	1,766									
McMinn	15,064	12,718	2,346									
McNairy	17,271	14,345	2,926									
Madison	9,321	8,429	892	69	68	1					66	3
Marion	30,874	15,406	15,468									
Marshall	10,910	9,541	1,369									
Marshall	19,259	14,429	4,830									
Mary	39,904	21,731	18,173									
Meigs	7,117	6,303	814									
Monroe	15,283	12,991	1,292	132	132						128	6
Montgomery	28,441	14,786	13,655	455	453					2	205	190
Moore	6,233	5,448	785	102	102						89	13
Morgan	5,156	4,857	289									
Ohio	22,912	18,841	4,071	185	184	1					158	27
Owen	12,153	11,811	342									
Perry	7,174	6,609	565	126	126						112	14
Pickett				111	111							
Polk	7,269	6,893	376									
Putnam	11,501	10,903	598	156	153					3	150	6
Rhea	7,073	6,306	773									
Roane	15,237	13,310	1,927									
Robertson	18,861	13,242	5,619									
Rutherford	36,741	20,248	16,493	560	560						351	209
Scott	8,021	5,864	1,157									
Sequitchee	2,565	2,509	56	28	28						28	
Sevier	15,541	14,848	693	72	72						72	
Shelby	78,430	34,608	43,822	1426	1372	19	11	24			906	430
Smith	17,799	14,215	3,584									
Stewart	12,600	9,933	2,667	355	249	2	1	3			202	53
Sullivan	18,321	17,011	1,310	373	378			1			349	30
Tennet	23,625	16,294	7,331	601	599	2					449	152
Tipton	21,073	10,482	10,591									
Troasdale	6,646	4,805	2,141									
Union	3,646	3,626	119									
Union	10,260	10,042	218	40	40						38	2
Van Buren	2,933	2,747	186									
Warren	14,079	11,801	2,278	62	62						53	9
Washington	16,181	14,604	1,577									
Wayne	11,301	10,232	1,069	134	134						126	8
Webster	24,538	20,125	4,413	129	128	1					103	26
White	11,176	10,173	1,003	107	107						98	9
Williamson	28,313	15,922	12,391	304	303	1					178	126
Wilson	28,747	20,292	8,455	247	247						168	79

.. No report. † County formed since census of 1880 was taken.

AN ABSTRACT of the Registration of Deaths in Tennessee, as appears from the records filed in the office of the Secretary of State, covering the period of twenty months, during which the law operated, from May 1, 1881, to Jan. 1, 1883, when it was soon afterwards repealed.

UNITED STATES CENSUS, 1880.				DEATHS.											
The State and Counties.	Total Population.	White Population.	Colored Population.	Whole Number.		SEX.						AGE.			
						White.			Colored.						
				White.	Colored.	Male.	Female.	Unknown.	Male.	Female.	Male.	Female.	Aggregate.	Average.	
Tennessee	1,542,359	1,138,831	403,528												
Anderson	10,820	9,917	903	20	20	9	11	—	9	11	—	—	—	20	—
Bedford	26,025	18,536	7,489	75	56	41	34	—	30	25	10	9	159	2.12	—
Benton	9,780	9,157	623	17	17	8	9	—	8	9	—	—	—	26	—
Blount	15,985	14,273	1,712	96	87	47	47	1	42	45	5	3	274	2.84	—
Bradley	12,124	10,258	1,866	—	—	—	—	—	—	—	—	—	—	—	—
Campbell	10,005	9,571	434	16	16	4	12	—	4	12	—	—	24	—	—
Cannon	11,850	10,696	1,154	31	28	19	12	—	18	10	1	2	93	—	—
Carter	10,019	9,385	634	—	—	—	—	—	—	—	—	—	—	—	—
Carroll	22,103	16,524	5,579	—	—	—	—	—	—	—	—	—	—	—	—
Cheatham	7,958	6,295	1,663	—	—	—	—	—	—	—	—	—	—	—	—
Claiborne	13,573	12,584	989	—	—	—	—	—	—	—	—	—	—	—	—
Clay	6,987	6,588	399	—	—	—	—	—	—	—	—	—	—	—	—
Cocke	14,808	13,361	1,447	—	—	—	—	—	—	—	—	—	—	—	—
Coffee	12,894	11,164	1,730	25	24	10	15	—	9	15	1	—	44	—	—
Crockett	14,109	10,493	3,616	—	—	—	—	—	—	—	—	—	—	—	—
Cumberland	4,538	4,496	42	18	18	8	10	—	6	10	—	—	24	—	—
Davidson	79,026	47,678	31,348	1057	553	590	527	—	283	266	244	254	2420	2.28	—
DeKalb	8,496	7,276	1,220	48	42	6	24	—	21	22	3	2	73	—	—
DeKalb	14,813	13,660	1,153	113	106	7	58	—	55	51	3	4	127	—	—
Dickson	12,460	10,229	2,231	20	16	4	12	—	8	8	4	—	54	—	—
Dyer	15,118	11,206	3,912	—	—	—	—	—	—	—	—	—	—	—	—
Fayette	31,871	9,633	22,238	123	86	57	70	—	41	28	27	27	202	—	—
Fentress	5,941	5,338	603	21	21	13	8	—	13	8	—	—	44	—	—
Franklin	17,178	13,646	3,532	—	—	—	—	—	—	—	—	—	—	—	—
Gibson	32,685	23,540	9,145	96	62	40	56	—	28	34	15	19	214	2.15	—
Giles	36,014	21,824	14,190	—	—	—	—	—	—	—	—	—	—	—	—
Grainger	12,384	11,556	828	—	—	—	—	—	—	—	—	—	—	—	—
Greene	24,005	21,850	2,155	41	40	1	22	—	21	19	1	—	121	—	—
Grundy	4,592	4,154	438	2	2	1	1	—	1	1	—	—	4	—	—
Hamblen	10,167	8,481	1,686	24	22	11	13	—	10	12	1	1	72	—	—
Hamilton	23,642	16,239	7,403	47	—	4	22	—	20	21	2	4	97	—	—
Hancock	9,098	8,516	582	—	—	—	—	—	—	—	—	—	—	—	—
Hardeman	22,921	13,313	9,608	93	72	47	44	—	46	34	10	13	230	—	—
Hardin	14,793	12,775	2,018	134	100	60	74	—	46	54	18	21	272	—	—
Hawkins	20,610	17,956	2,654	—	—	—	—	—	—	—	—	—	—	—	—
Haywood	26,053	8,497	17,556	—	—	—	—	—	—	—	—	—	—	—	—
Henderson	17,430	14,414	3,016	69	59	10	34	—	34	23	—	12	121	—	—
Henry	22,142	15,488	6,654	64	42	12	20	—	17	34	5	8	1154	—	—
Hickman	13,086	9,849	3,237	87	72	15	41	—	32	36	8	8	196	—	—
Houston	4,295	3,487	808	—	—	—	—	—	—	—	—	—	—	—	—
Humphreys	11,379	9,708	1,671	—	—	—	—	—	—	—	—	—	—	—	—
Jackson	12,008	11,575	433	117	115	2	69	—	54	61	1	1	1755	—	—
James	5,187	4,478	709	—	—	—	—	—	—	—	—	—	—	—	—
Jefferson	15,846	13,839	2,007	—	—	—	—	—	—	—	—	—	—	—	—
Johnson	7,786	7,295	491	43	40	3	19	—	17	22	2	2	746	—	—
Knox	39,124	31,380	7,744	189	113	77	98	—	55	67	43	34	4063	—	—
Lake	3,963	3,274	689	—	—	—	—	—	—	—	—	—	—	—	—
Lauderdale	14,918	9,061	5,857	45	33	12	22	—	18	14	6	7	574	—	—
Lawrence	10,383	9,599	784	8	8	6	1	—	6	1	—	—	66	—	—
Lewis	2,181	1,963	218	17	16	1	4	—	3	13	1	—	61	—	—
Lincoln	26,960	20,643	6,317	153	123	29	69	—	53	71	16	12	3797	—	—
Loudon	9,148	7,382	1,766	—	—	—	—	—	—	—	—	—	—	—	—
McMinn	15,064	12,718	2,346	—	—	—	—	—	—	—	—	—	—	—	—

* No report.

ABSTRACT OF DEATHS—Continued.

UNITED STATES CENSUS, 1880.				DEATHS.												
	Total Population.	White Population.	Colored Population.	Whole Number.			SEX.						AGE.			
				White.	Colored.	Male.	Female.	Unknown.	White.		Colored.		Aggregate.	Average.		
									Male.	Female.	Male.	Female.				
Adams	17,271	14,845	2,426	10	7	3	7	3			5	2	2	1	110	11
Adams	9,321	8,429	892	20	19	1	10	10				10	1		628	31%
Adams	30,874	15,406	15,468													
Adams	10,910	9,541	1,369													
Adams	19,259	14,429	4,830													
Adams	39,904	21,731	18,173													
Adams	1,117	8,303	814													
Adams	15,283	12,991	1,292													
Adams	28,481	14,786	13,695	73	33	40	41	32		21	13	20	19	1551	21%	
Adams	5,233	5,448	785	29	29		10	18	1	10	18			662	21%	
Adams	5,156	4,887	269													
Adams	22,912	18,341	4,071	14	12	2	8	6		7	5	1	1	112	8	
Adams	12,153	11,811	342													
Adams	7,174	6,609	565	24	23	1	12	12		11	12	1		370	15%	
Adams				16	16		9	7			2			253	16%	
Adams	7,269	6,893	376													
Adams	11,501	10,903	598	39	39		16	23		16	23			953	24%	
Adams	7,073	6,300	773													
Adams	15,237	13,310	1,927													
Adams	18,861	13,242	5,619													
Adams	38,741	20,248	16,493	371	108	173	177	191	3	99	96	83	90	8512	22%	
Adams	6,021	5,864	157													
Adams	2,565	2,509	56	11	11		9	2		9	2			237	21%	
Adams	15,541	14,848	693	31	29	2	14	17		13	15	1	2	237	21%	
Adams	78,430	34,508	43,922	295	127	168	168	126	1	80	48	91	76	5225	17%	
Adams	17,799	14,215	3,584													
Adams	12,690	9,933	2,757	87	54	13	36	31		29	25	7	6	1385	20 4-5	
Adams	18,321	17,011	1,310	94	94		42	62		59	35			3521	26 4-5	
Adams	23,625	16,294	7,331	54	43	11	24	30		19	23	5	7	1935	35%	
Adams	21,033	10,482	10,551													
Adams	6,846	4,505	2,141													
Adams	3,645	3,528	119													
Adams	10,280	10,042	218													
Adams	2,933	2,747	186													
Adams	14,079	11,801	2,278	8	8		8	5		3	5			239	29%	
Adams	16,181	14,604	1,577													
Adams	11,301	10,282	1,019	65	61	4	31	34		28	38	3	1	147	22%	
Adams	24,538	20,125	4,413													
Adams	11,176	10,173	1,003	48	46	2	32	16		31	15	1	1	1104	23	
Adams	28,313	15,922	12,391	61	41	20	22	39		15	26	7	13	1474	24	
Adams	28,747	20,292	8,455	15	10	5	5			3	7	2	3	238	19%	

No report. † County formed since census of 1880 was taken.

REPORT OF COMMITTEE
ON
PRISONS IN TENNESSEE.

BY
P. D. SIMS, M. D..
OF CHATTANOOGA, TENN.,

MEMBER OF STATE BOARD OF HEALTH, AND CHAIRMAN
OF ITS COMMITTEE ON THE SUBJECT.

PRISONS IN TENNESSEE.

*To the President of the Tennessee State Board of Health,
Nashville, Tenn.:*

The various gradations in the progress of a people, from a state of heathenish barbarity to one of enlightened Christian civilization, are not better marked by any of their institutions than by their system of punishing offenses against their laws. We feel no small degree of chagrin and disappointment when compelled to acknowledge that there has been, in the four years since your last published report, little advance made in our system of crime punishment.

The limited time that has elapsed since my assignment as Chairman of your Committee on Prisons, has not afforded opportunity to collect and formulate detailed records of the various county jails in the State. As Chairman of that Committee, assuming the State prison and its management to represent, in a general sort of way, the status of the public mind in reference to crime and its punishment, the crime class and their discipline, I beg to devote most of this report to that institution, and through it to direct attention to the general penal system of the State. Some brief quotations from reports heretofore made to this Board, by various members and committees, and from various reports made by officers of the institution itself to the State government, will be enough of description of the prison and its condition; for it has been so much described that most reading people in the State ought to be conversant with it. The less known of it out of the State the better, perhaps, for the State.

Built more than half a century ago, outside the limits of a small town, it is now in the midst of a great, growing, populous city, the capital of the State, the city in which every citizen of the State should feel a just pride and an abiding interest. To the health of that city it is a constant menace and a constant danger.

More than one hurtful epidemic, emanating from its walls, has already scourged both the city and the State; and why not? A large proportion of its inclosure is made earth from prison waste, the night soil and waste from the workshops which, for nearly half a century, were all buried in the ground inside the inclosure. Its drainage is, and of necessity must be, over and through this soil, reeking with poison and with death, into an open branch or sluggish stream that slowly winds its way through the heart of the city to the Cumberland river. The building, you have been told by my predecessor, a distinguished sanitarian, "was erected before prison architecture had been inspired by humanity or enlightened by sanitary science;" consequently, it is distinguished by the conspicuous absence of decency and comfort.

Of its architecture and construction it is enough to say, after the various other descriptive reports that reach, through other channels, the State authorities, that its sleeping, or cell capacity, comprises 382 cells, ranging in capacity from 162 to 309 cubic feet. The sleeping space considered necessary by sanitary science for one individual is 800 cubic feet. The largest of these cells is much less than one-half and the smallest much less than one-fourth that amount. The number of convicts allowed by law in this prison is 550. Many of the cells in the upper tiers are abandoned, being considered unsafe; so that in most of these cells, significantly described by one writer as "containing less air space to the individual than the cubic contents of a good-sized grave," two persons are shut up for the night "to dream, perchance to sleep," to stifle in the poisonous emanations of each other's decay.

The only ventilation to these cells, surrounded by poorly ventilated corridors, is a small grate at the top and another at the bottom of the door, and a small flue from the top of the cell to the roof, the flue and the lower grate having been wisely added by the present Superintendent.

So far as the present management is concerned, it has probably made the sanitary condition of the prison about as good as it can be made without an entire change of the institution, which means the erection of a new building on a new site, with an entire change of prison system. As to the system under which it is managed, a good insight into its working and its results should be obtained through the reports of its own officers, either by direct information, where statistics are given, or by inference where they are wanting.

The earliest report that I have been able to find is that for the two years ending December 1, 1880. In this the Warden says:

Number of convicts on hand December 1, 1878.....	1,153
Number of convicts on hand December 1, 1880.....	1,241
Number died in the two years.....	135
Number escaped.....	86
There were in the main prison at date of report.....	663
In the branch prison at Tracy City mines.....	302
In the branch prison at Ensley's farm.....	139
In the branch prison at Coal Creek mines.....	112
In the branch prison at Spence's farm.....	25

Analyzing this report, I find that the death rate for the entire prison population for the two years, taking the population at its maximum, which makes it most favorable, was fifty-four per thousand per annum. The white death rate was thirty-two per thousand per annum. The colored was sixty-five per thousand per annum. The death rate in the main prison at Nashville was forty per thousand per annum. The death rate for the branch prisons, in the aggregate, was seventy-one per thousand per annum. There is a significant disinclination manifested on the part of the

Wardens of the Tennessee Penitentiary to thus analyze their mortuary reports.

This one endeavors to soothe the nervous sensibilities of his co-laborers by stating that "all the officers have done their utmost to mitigate the unfavorable conditions, and their success is shown by the small death rate and little sickness in the prison, which will compare favorably with any prison in the United States." The good Lord pity the standard of comparison! He must, however, have drawn the comparison between his rate of mortality in the main prison, which was fifty-four per thousand per annum, and that in the branches, which was seventy-one, instead of comparing, as he says, with other prisons of the United States.

The annual report of the Commissioners and Warden of the State prison of Massachusetts, for the year ending October 1, 1883 (the only one at my command), shows a prison population of 650. Deaths for the year, seven; being at the rate of ten and seven-tenths per thousand; and no escapes. The number reported killed outright in the branch prison at Tracy mines is within a fraction of this rate of mortality, to say nothing of those that die of disease and those reported as "blanked," a very suspicious cause of death in a leased prison.

Reports of the penitentiary for the eastern district of Pennsylvania, for fourteen years, ending October, 1883, show a rate of mortality running from eight to twenty-seven per thousand per annum, averaging about fifteen; and no escapes. Our Warden, in the above Tennessee report, adds: "As a reformatory I do not consider the Penitentiary a success. It is a protection to society for the time against criminals. Some few, perhaps, go out wiser, if not better, men. None go out with an improved moral character."

In the Warden's report for the two years ending December 1, 1882,

The prison population is said to be.....	1,336
In main prison.....	685

In the branch prisons.....	651
Deaths for the two years.....	89
Rate per thousand per annum.....	32 $\frac{1}{10}$
Deaths in main prison.....	42
Rate per thousand per annum.....	31 $\frac{1}{10}$
Deaths in the branch prisons.....	47
Rate per thousand per annum	36
Escaped in the two years.....	125

—about ten per cent. of the average prison population, five per cent. per annum. Explanatory of the mortuary record, which the Warden seems to consider exceptionally good, he says: "The lessees and officers have done all in their power with reference to the health of the convicts, and they have succeeded admirably, as shown by the physician's report." "As to the sick and death rate of this prison," he says, "I desire to call your attention to the fact that in sending convicts to the branch prisons especial care is taken to prevent the sending of any but able-bodied men, thereby leaving all the diseased and disabled men in the main prison. It has also been the custom to return the invalid and afflicted convicts from the branch prisons to this prison, thereby materially increasing the number."

This Warden, as the present prison system seems to compel every one connected with it to do, labors through his report to shield from unkind criticism at least the personnel of the system, and yet, in the honesty of his nature, he is forced to cry out, "no woman should be sentenced to the Penitentiary until the State makes better provision for their care." * * * "The best wisdom of the age should be called into requisition to enact laws and prescribe for the government of prisoners." * * * "Under the present laws and customs the Tennessee Penitentiary is a school of crime instead of being a reformatory institution. Every convict who enters this prison goes in upon an equality with those in prison, so far as the laws are concerned." * * * "There are now about fifty boys in the Penitentiary under eighteen years of age. I care not how bad those boys may have been when received, nine-tenths of them leave prison

much worse than when they came; and why not? They are thrown into the midst of hundreds of the worst criminals the State affords; sleeping in the same cells with them at night, and working at the same bench or machine in the day." "The young and the old, the comparatively good and the vilest and the most depraved are thrown promiscuously together, which association is calculated to reduce all to the level of the most degraded."

We come next to the report for the two years just past, ending December 1, 1884, which, through the kindness of Col. Carter, the Superintendent, we have been permitted to examine, and in a hasty manner make some extracts and collations, while in the hands of the public printer for publication. If any errors should be found in these quotations they are attributable to the necessarily hurried manner in which they were made, and certainly not to a willingness to do an injustice to the report.

This report of the Warden shows at its date, December 1, 1884:

A prison population of.....	1,323
White.....	405
Colored.....	918
Death roll for the two years.....	205
Death rate per thousand per annum.....	77 $\frac{1}{2}$
White death roll for the two years.....	58
Colored death roll for the two years.....	147
White death rate per thousand per annum.....	71 $\frac{1}{2}$
Colored death rate per thousand per annum.....	80
These 1323 convicts are distributed as follows	
In Penitentiary at Nashville.....	528
White.....	228
Colored.....	300
Death roll in this prison for two years.....	43
Death rate per thousand per annum.....	40 $\frac{1}{2}$
White death rate per thousand per annum.....	24
Colored death rate per thousand per annum.....	53 $\frac{1}{2}$
In the branch prison at Tracy City there are.....	436
White.....	71
Colored.....	365
Death roll for the two years.....	83

Death rate per thousand per annum.....	95 $\frac{2}{3}$
White death rate per thousand per annum.....	147 $\frac{1}{6}$
Colored death rate per thousand per annum....	84 $\frac{2}{3}$
In the branch prison at Coal Creek there are.....	161
White.....	66
Colored.....	95
Death roll for the two years.....	36
Death rate per thousand per annum... ..	111 $\frac{3}{8}$
White death rate per thousand per annum.....	121 $\frac{1}{6}$
Colored death rate per thousand per annum.....	105 $\frac{3}{8}$
In the branch prison at Inman there are.....	177
White.....	40
Colored.....	137
Death roll for the two years.....	41
Death rate per thousand per annum.....	115 $\frac{1}{6}$
White death rate per thousand per annum.....	125
Colored death rate per thousand per annum.....	113

In the branch prison at Dr. Morrow's farm, recently established, there are 21, all white. No deaths at this place, but two deaths chargeable to this squad of prisoners, at other places. Before these figures humanity stands aghast, and our boasted civilization must hide her face in shame. We are appalled at their enormity. We fain would throw over them the mantle of eternal oblivion, and forever hide them from the gaze of the civilized world. But we must not; they are before us, and will not down at our bidding. They are our own published records, made by ourselves, for ourselves. The once proud State of Tennessee, chivalrous and public-spirited, stands to-day before the world a self-convicted murderer. Her own sons and daughters are her victims.

As we have seen by reference to the published reports of State prisons, conducted as penal and reformatory institutions rather than as sources of revenue, prison mortality should run from 8 to 25 per thousand per annum, whereas ours has reached the startling height of 147 $\frac{1}{6}$ per thousand per annum.

If by a humane and well regulated penal system prison mortality is reduced to an average of 15 per thousand, then the system that shows a mortality of 147 per thousand is

responsible for the murder of 132 per annum of every thousand in its charge.

Whatever rights and privileges a man has forfeited to society by crime should be adjudged by the court that convicts him, and all other rights pertaining to his person and his property should be as inviolable to him as to the man who had never been accused of crime. If the criminal by his offense has forfeited his right to life, let the court so decree, and let him be taken to the gibbet and decently and solemnly executed; if not, let him not be done to death under a code of professed reformatory discipline.

It may be claimed that the State Boards of Health are merely sanitary advisers of the State, and have nothing to do with the general question of prison punishment. But the alarming mortality of our prisons, compared with the rate of mortality in our ordinary population, and especially when compared with the mortality in prisons conducted under other systems, makes it necessary to inquire whether the system is not chargeable with this heavy mortality. And may we not inquire whether the system is in any sense meeting the legitimate wants and purposes of penal law?

The large increase of crime in the country in the last few years, the rapidly growing proportion of the crime-class to the law abiding, make it the duty of all—of philosopher and philanthropist, of political economist and humanitarian, of legislator and of jurist—to enquire, earnestly, whether the means adopted by the State for the suppression of crime are in accordance with the most advanced thought and research in the mysteries of the science of penology; whether the methods adopted are the best calculated to reduce crime in the State to the lowest possible minimum; to enquire, in fact, whether the whole system has not been perverted to other purposes than those of reforming the criminal and protecting society.

The proper object of all penal law is not vengeance; nor is it, may we suggest, direct pecuniary gain to the State.

It is, first, the protection of society ; second—in which society, too, has an abiding interest—the reformation of the criminal ; that he may be returned to society a useful, and, not as before, a hurtful and destructive member ; and, third, exemplary, to deter others from the ways of crime.

The State occupies to her citizens much the same relation that the parent bears to his child ; and in the adaptation and execution of penalty for the violation of law, for the disregard of the expressed will of the governing power, the same principles should obtain in both ; the same fostering care, the same earnest search for an efficient means of reformation, should guide the State in the enactment and execution of all penal law that moves the loving father in the chastisement of an erring son. No punitive enactment or execution by the State should be in a spirit of vengeance, any more than a father should in a rage fall upon a disobedient son and brutally beat him for the mere gratification of his own vindictiveness. And the State that exhibits itself to the world as farming out its criminal class for gain, making the crimes of its citizens one of its sources of revenue, is very much in the attitude of a mother who bedecks her person or fills her coffers with the earnings of her daughter's shame.

Is any one of the objects of punishment secured by the present system in Tennessee ? Is society protected ? For answer we have only to refer to the foregoing reports, made by friends of the system, anxious to present it in the best possible light, and to apologize for all its defects.

The escapes from the prisons of the State in these six years averaged fifty per annum, or three hundred for the six years. Says a distinguished Southern writer on prison discipline : “The annual reports, taken as they could be procured (one for 1883, three for 1881, and one for 1882), of five of the largest prisons in the United States, show that, from the aggregate population of those prisons, numbering 5,300 convicts, there escaped in twelve months but

one prisoner. In all the State prisons in the country, not kept by the lease system, with a population, at dates of reports, of 18,400, there escaped in one year sixty-three. But in the one year ending December 1, 1881, there escaped, from an average population of about 630 convicts, at these Tennessee branches, forty-nine prisoners."

These three hundred convicted criminals that have, in the last six years, gone out from the custody and keeping of the State, are not, in any sense, reclaimed criminals. They are not discharged convicts, supposed to be reformed, and willing to go back to their homes and prove their reformation by leading honest lives. They are, wherever they go, fleeing from the hand of justice, suspicious of the world; regarding every man as an enemy, they are "*hostes humani generis*." They can follow no regular employment, but, hiding like wild beasts by day, they prey upon society at night.

The attempted punishment of these men, instead of protecting society, has by an hundredfold increased its dangers. The friends of the system, in their reports, have, with one voice, told us that the convict, at the end of his term, went out of prison a worse man than he entered in the beginning. If that be true of the man that is discharged, it is infinitely more true of the man who escapes and flees from the law. Then the system neither protects society nor reforms the criminal.

Is it any more successful in its exemplary purpose? Does it deter others from crime? Both theory and facts answer, "No." To the casual observer, who saw only the cruelty and inhumanity of its methods, with the fearful mortality attending them, there might seem a reason to suppose that others would shrink from crimes whose commission would subject them to such discipline. But it is the testimony of all observers of crime punishment, that it is the certainty and not the severity of penalty that deters men from crime. Men of malicious and criminal intent have little fear of a

penal code as loosely executed as the discipline of a retreating army—as easy to escape the one as to desert the other. Where ten per cent. escape each villain counts on being one of the ten. This theory is abundantly borne out by the fact that the change of our system from the public account to the lease system, has increased our crime-class, as indicated by our prison population, more than one hundred per cent., nor has the change been more favorable to the life of the convict. The expectations of its friends have been as far from realization in that respect as in others, at least, as shown by the only standard at our command, the comparative mortality in the main prison, or Penitentiary, with that in the branches, which are an outgrowth of the lease system, and were expected to lower the rate of mortality. See report to this Board in 1880, in which it is said: "About half of this number (referring to the State's convicts) are in the Penitentiary, the remainder are distributed in branch prisons, which were wisely established in 1869 by the Board of Inspectors. The first of these was at Battle Creek coal mines, which was soon followed by another at Sewanee. These are wooden structures, inclosed by wooden palisades, which in point of security, comfort and healthfulness, have proven superior to the parent institution, as will be seen by an appended report furnished by Dr. Clark." (The misfortune of this report is its failure to compare the mortality in the branches with that in the parent institution.) "The value to the State of this new departure in prison management cannot be overestimated. Up to that time the support of the prison was a heavy burden to the tax-payers; now it pays a small revenue; besides, it is lending a mighty impetus to the development of our great mineral wealth."

The rate of mortality for the year ending December 1, 1880, was, in the Penitentiary, 40 per thousand per annum; aggregate in the branches per thousand per annum, 71. For the next two years: in the Penitentiary, $31\frac{3}{16}$; in the

branches, 36. The Warden tells us for these two years (we presume the same for the former two) only able-bodied men were sent to the branches.

In the next two years, ending December 1, 1884, as we have already seen, the rate of mortality in the Penitentiary was $40\frac{7}{10}$, while in the branch prisons, in aggregate, the death rate was $101\frac{3}{10}$, in some of them much larger.

A remarkable, unprecedented, and to me unaccountable, fact in every reported instance, in these branch prisons, the white mortality rate is greater than the colored, and in every one the mortality in the branches is largely in excess of that in the Penitentiary.

It is proper to state that the very large disproportion against the branch prisons for the last two years is explained by the Superintendent upon the ground that the present lessees send the feeble and diseased to the branches and keep the able-bodied in the main prison. But we have seen that even when the opposite was the rule, the balance was still against the branches.

We are forced to the conclusion that, by this system of prison management, society is less protected, criminals are less reformed, criminally inclined are less deterred, and a far larger per cent. of convicts die from their punishment. But one solitary consideration commends it; "it brings a revenue to the State. It is self-sustaining." This is the argument that is in some way tacked on or interpolated into every report submitted in reference to it; and they might well add, "it is self-perpetuating;" for it is simply a school where men and women and boys are trained and educated by free association with each other in the mysteries and methods and science of crime, and exasperated to a fiercer and more bitter enmity to society by the inhumanity of their treatment.

Nor is it alone upon the crime class that the evil effects of the system fall. When that idea of monetary gain, as a palliation or concomitant of an evil, has once taken posses-

sion of a people, they lose sight of all better or higher considerations of the subject. It blinds the judgment, and dwarfs all the finer sentiments of humanity. Crime becomes one of the available assets of the State, and greed a ruling sentiment of her nature. She gloats over the gold for which she sells her erring sons and daughters into a bondage more galling than death.

The more criminals, the more revenue, and the less the poor tax-payer has to contribute to the support of the government. These are the considerations that urge the perpetuity of this hurtful and demoralizing system.

We have judged the system by its results as recorded and reported by its friends, and not by any unfriendly criticism of its enemies. We have compared these results with the published results, equally authoritative, of other systems. It stands condemned by its own testimony.

We need not flatter ourselves that other officers, or other lessees, would manage the same system better. We are thoroughly persuaded that no others would make a more earnest and efficient effort to get the very best results the system would allow. It is the system at fault.

Mr. Cable, who stands at the very forefront of American thinkers and American writers on prison discipline and prison reform, says on this subject: "If now we are to begin a scrutiny of this evil, we shall do well to regard it first as it presents itself in its least offensive aspect. To do this we turn to the State prison or prisons of Tennessee."

Thus we see, as bad a showing as the system has made with us, it is regarded by the best authority as "the system at its best."

Reviewing at length the system in Tennessee, as shown by some of the reports from which we have quoted, he concludes thus: "But it is not to be believed, while there is room for doubt, that the people of an American State will knowingly allow such a stupid and wicked trifling with their State's good name and the safety of society, or even such a ghastly burlesque of net revenue."

This is but an intimation of the light in which we are viewed by the outside world.

Were we permitted to recommend, we would suggest that the State no longer consider crime as one of her resources, nor yet her prisons as public charities, but as interests, necessary to be provided and paid for out of her common treasury, as her courts and public schools—all parts of one systemic whole.

While we have no sympathy with that sordid greed for gain "that forgets that even the convict is a human being, and that his body and soul are not so the property of the State that both may be crushed out in the effort to reimburse the State the cost of his scanty food, and at the end of his term what there is left of him be dismissed, an enemy of human society," we are no more in sympathy with that false and sickly sentimentality that would bestrew the criminal's bed with flowers, for the bare reason that he is a criminal, nor yet with that other sentiment that would commit him to idle punishment, lest the product of his labor should compete with the product of honest toil.

It is the effort to avoid such competition that places men in the attitude of law-breakers and criminals.

Tennessee cannot, in a day, change her prison system, however unsatisfactory and hurtful it is. She has prison accommodations, really, for only about one-fourth of her present prison population, and that, as has been shown too often to be repeated, wholly unfitted for the purpose, both in character and location.

Then she has given a lease, with all the sanctity and binding force of a contract, which has yet four or five years to run. She is not prepared to take care of her convicts. If she were prepared she could not get them, having transferred that right to another for a stipulated period of time.

We would suggest that the Legislature, now about to convene, prepare at its present session for a change from this wicked and demoralizing system to one in keeping with

the intelligence of the age in which we live. This could doubtless best be done by the appointment of a competent commission whose duty it should be, prior to the expiration of the present lease, to thoroughly investigate both the prisons and the prison systems of the country, and from them to formulate a system and erect a prison in keeping with the claims of the State to a place among civilized and enlightened communities.

APPENDIX.

CHATTANOOGA, TENN., February 23, 1885.

DR. J. D. PLUNKET, *Pres't Tenn. State Board of Health*:

DEAR SIR:—I beg to add the following appendix to the report on prisons, submitted by me at the last regular meeting of the Board.

It is a tabulated comparative statement of results in the various State Prisons in the country, so far as I have been able to obtain them.

From a few States I have failed to get statistics. From Oregon and California I have had no response to inquiries. From Louisiana and Kentucky, strange as it may seem, I am informed that they publish no prison reports.

All official reports cited in the tables below are in my possession, except that of the State of Arkansas. The figures in that are furnished me by the Superintendent of Prisons, and are accepted as authentic.

The data in this comparison of results are all made upon the basis of the average prison population. I am aware that many prison officials, and some outside statisticians, take as the basis the whole number of registered convicts for the year.

As a comparison of results between prisons, this would not affect the ratio, if all were put on the same basis, and would consequently do no relative injustice to any. But when it is sought, as is often the case, to institute comparison between prison mortality and the mortality of outside communities, this rule would work great injustice to the outside communities, all mortality rates for them being made on the basis of a fixed census at one particular time in the year, and never on the basis of the whole number of people that may move in and move out of the community,

or be born therein during the year, however much these may contribute to the death list. The average of population of the prison for the year is the only just estimate of its population to compare with the annual census of an outside community.

For purposes of comparison I have divided the States into two groups, one containing the States adopting what is known as the lease system of prison management, or the system of farming out the prison force to individuals or corporations, to be fed and clothed and worked by them at their pleasure without the prison walls; the other containing the States that keep themselves the care and control of the prison population, and work them inside the walls, either on public account or by contract.

The following is the grouped table, and comparison of results as to mortality and escapes :

NAMES OF STATES.	DATES.	No. of years.	PRISON SYSTEM.	Average annual					Average annual rate of escapes per 1000.
				prison population.	annual death toll.	annual death rate per 1000.	annual number of escapes.	annual rate of escapes per 1000.	
Tennessee.....	1852, 1853, 1856, 1857.....	4	Public account.....	246	5.7	23	2	1	2
New Jersey.....	1880, 1881, 1882, 1883, 1884.....	5	Contract and public account.....	811.3	24	29.5	2	2	2
Kansas.....	1883, 1884.....	2	Public account.....	688	9.5	13.8	3	4	4
West Virginia.....	1883, 1884.....	2	Contract.....	230	4.5	19	0	0	0
Illinois.....	1877, 1878, 1879, 1880, 1881, 1882.....	6	Contract.....	1537	18.8	12	2.5	1.5	1.5
Minnesota.....	1881, 1882, 1883, 1884.....	4	Contract.....	286	2.7	9.6	1	3	3
Missouri.....	1879, 1880, 1881, 1882.....	4	Contract.....	1269	23.5	18	13.5	10	10
Wisconsin.....	1882.....	1	Public account.....	336	3	8.9	2	6	6
Nevada.....	1881, 1882, 1883, 1884.....	4	Public account.....	127	1.2	9.8	0	0	0
New Hampshire.....	1881, 1882, 1883, 1884.....	4	Contract.....	134	6	44.7	0	0	0
Connecticut.....	1884.....	1	Contract.....	278	4	14.3	1	3.6	3.6
Iowa.....	1882, 1883.....	2	Contract.....	375	1.7	4	0	0	0
Ohio.....	1881, 1882, 1883.....	3	Contract.....	1268	18.6	14	3	2	2
Massachusetts.....	1882, 1883, 1884.....	3	Contract.....	612.3	8.3	13.6	.6	1	1
Pennsylvania, E. District.....	1879, 1880, 1881, 1882, 1883.....	5	Pub ac't, indiv'l treatm't plan.....	1033	21.6	20	0	0	0
Pennsylvania, W. District.....	1881, 1882.....	2	Public account.....	677.3	5	7.4	2	2.7	2.7
Vermont.....	1881, 1882, 1883, 1884.....	4	Contract.....	104	7	7	0	0	0
Maine.....	1884.....	1	Contract.....	163	0	0	0	0	0
Colorado.....	1881, 1882, 1883, 1884.....	4	Public account.....	307	2.7	9	1.7	5.7	5.7
Albany, N. Y.....	1880, 1881, 1882, 1883.....	4	Contract.....	807	14	17	0	0	0
Sing Sing, N. Y.....	1878, 1879, 1881, 1884.....	4	Contract.....	1589.5	18.2	11.1	1	.6	.6
Auburn, N. Y.....	1881.....	1	Contract.....	911	21	23	0	0	0

This comparison is most decidedly disparaging to the lease system of managing prisons, showing a death rate about four hundred per cent. greater than that under other systems, and a rate of escapes more than twenty times as large.

While the average death rate under the lease system is four times that under the other system, Tennessee shows a rate yet twenty-five per cent. greater than the average of the bad systems, and more than three times greater than her own record under public account management. How long can Tennessee afford to stand thus advertised to the world?

Respectfully, your obedient servant,

P. D. SIMS,

Chairman Committee on Prisons.

EPIDEMIC & CONTAGIOUS DISEASES,

As they Prevailed in Tennessee during 1881-82.

A REPORT

BY

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OF MEMPHIS, TENN.,

MEMBER OF THE STATE BOARD OF HEALTH, AND CHAIR-
MAN OF ITS COMMITTEE ON EPIDEMIC AND
CONTAGIOUS DISEASES.

EPIDEMIC AND CONTAGIOUS DISEASES.

The following report on epidemics occurring in the State during 1881 and 1882 is not as complete as desired, owing to the fact that the committee was unable to obtain full and reliable statistics. Most of the reports made to the Secretary are from physicians in private practice, and, with few exceptions, give very little information beyond their personal observation, except of a general character, which cannot be formulated into reliable statistics. For example, the number of cases of a disease, which occurred at a given locality, and the number of deaths resulting therefrom, are estimated, and not from official report.

The report of Dr. Chas. P. Kemp, of Rugby, on an epidemic of typhoid fever, which occurred in that English colony or settlement, is an exception, and is herewith published in full, and made a part of this report.

The vital statistics act passed by the General Assembly, March 30, 1881, did not give that satisfaction which it was hoped or intended it should, and consequently failed of its object. The spirit of the law was commendable, and essential to a proper registration of information for such returns, and to carry out that clause of section six of the act of March 26, 1877, creating the State Board, which states that "they shall especially study the vital statistics of the State, and endeavor to make intelligent and proper use of the records of sickness and death among the people." The act of March 30, 1881, known as the vital statistics law, should have been amended, not abolished, as was done by the last Legislature, March 23, 1883. In consequence of a lack of proper official returns, this report, as above

stated, falls short of what it should or otherwise would be. The Committee takes occasion, however, to express its sense of obligation to those gentlemen who responded to the requests of the Secretary for information in regard to epidemics in their respective localities, and would herewith publish their reports in full, were it not for reasons above given, and the extension of this report beyond proper limits.

MEASLES.

In the latter part of the winter and spring of 1881, measles prevailed very generally throughout the State, perhaps to a greater extent than ever before—certainly greater than there is any record of—but all reports agree that it was attended with light fatality; and the disease, though extensive as to area, prevailed mostly among children, and was of a mild type. The disease was reported in the following places, and in every instance “in a mild form” or “few deaths,” where any comment was made. Some reporters designated the disease as German measles or *Rotheln*.

Reports were received from the following authorities:

Memphis, Shelby county, Memphis Board of Health; Nashville, Davidson county, Nashville Board of Health; Knoxville, Knox county, Knoxville Board of Health; Chattanooga, Hamilton county, Chattanooga Board of Health; Murfreesboro, Rutherford county, Murfreesboro Board of Health; Shelbyville, Bedford county, Shelbyville Board of Health; Brownsville, Hardeman county, Dr. W. W. Taylor; Moscow, Fayette county, Dr. W. B. Grandberry; McMinnville, Warren county, Dr. Thomas Black; Taylorsville, Johnson county, Dr. T. D. Donnelly; Athens, McMinn county, Dr. E. A. Cobleigh; Bristol, Sullivan county, Dr. J. A. Dickey; Grand Junction, Hardeman county, Dr. T. E. Prewitt; Milan, Gibson county, Dr. J. R. Harrison; Lebanon, Wilson county, Dr. J. S. Fite; Pikeville, Bledsoe county, Dr. J. A. Rose; Mossy Creek, Jefferson county, Dr. S. P. Hood; Coghill, McMinn county, Dr. D. R. Lusk; Trenton, Gibson county, Dr. T. J. Hap-

pel; Decatur, Meigs county, Dr. A. J. King; Coulterville, Hamilton county, Dr. V. J. Kennedy; Martin, Weakley county, Dr. C. M. Sebastian; Tazewell, Claiborne county, Dr. Jas. A. Day; Soddy, Hamilton county, Dr. C. W. Champion; Clarksville, Montgomery county, Dr. C. W. Beaumont; Manchester, Coffee county, Dr. J. E. Hough; Camden, Benton county, Dr. W. P. McGill.

In a number of instances reporters said, "hear of a few cases," or "a few cases scattered through the country," or "the number of cases cannot be accurately reported, as there is no registration of such cases in the county." It may be safely stated that the disease was epidemic throughout the State, with the exception of some isolated localities. The above list of towns was about equally divided between the three geographical divisions of the State, East, Middle and West Tennessee. There were no reports of this disease prevailing to any marked extent in 1882.

SCARLET FEVER

was reported in a number of localities in Memphis, Nashville, Shelbyville, Chattanooga, and at several other points of lesser note, but at no place did the disease prevail to the extent to be called epidemic, unless at Linden, in Perry county, in 1881, where two hundred cases and twenty-five deaths were reported by Dr. J. E. Dodson. These numbers are estimated, not from actual count; if they are approximately correct, very little precaution could have been taken by the authorities or individuals to prevent the spread of the disease. In the three principal cities of the State, Memphis, Nashville and Knoxville, the number of deaths reported from scarlet fever are as follows: Memphis, in 1881, two deaths; in 1882, none; Nashville, in 1881, nine; in 1882, seventeen; Knoxville, in 1881, twenty-five cases reported and five deaths, none in 1882. In this connection, the attention of Local Boards of Health and physicians generally is called to the rules published in a circular by the State Board of Health for the restriction and prevention

of this and other infectious diseases. These rules are printed in convenient shape for distribution, and can be had by application to the Secretary. In the cities above mentioned, epidemics of this and other diseases have been prevented by their enforcement.

DYSENTERY

was reported as epidemic in three localities in the latter part of the summer and fall of 1881. To Dr. J. S. Neely, of Middleton, Hardeman county, the Committee is indebted for information in regard to an extensive epidemic of this disease which prevailed in that town and vicinity. The first cases reported were July 25th and 27th, one a half miles from the town. The disease prevailed until late in November. The estimated number of cases in the town and within a radius of seven miles was five hundred. Fourteen deaths occurred in the town and immediate vicinity, and it was estimated that fifty deaths occurred within a radius of seven miles. Middleton is a small town of a few hundred inhabitants, sixty-nine miles east of Memphis, on the Charleston railroad, in an old settled, healthy section of country, and, as far as known, there was no unusual local cause for this epidemic. The disease continued until late in November in localities most affected with malarial fevers. One characteristic, mentioned by both correspondents, was a great tendency to suppression of urine, difficult to relieve, and often proving fatal, especially in children. In a majority of cases of recovery from severe attacks, convalescence was slow, with decided tendency of relapse; some cases were seriously affected for forty or fifty days. Gastric disturbance was a prevailing symptom. The water supply of both town and country was from wells, cisterns and springs, which was regarded as of good quality and abundant. There was no pollution of either water or air from vaults, cesspools, etc.; the population was too sparse to admit of either, to any serious extent, from that source.

Trenton, in Gibson county, was visited by an epidemic

of dysentery in the fall of 1881, the first case reported being September 13, though there is reason to believe that there were cases both in the town and neighborhood prior to this. This epidemic continued until November. It was considered at its worst from "October 4 to 23, inclusive." Dr. T. J. Happel, of Trenton, read an essay before the Tennessee State Medical Society, at its annual meeting in Memphis, in May, 1882, on this epidemic. In this essay he estimated fifteen per cent. of the population of the town and immediate vicinity were affected, but does not give population or estimated number of cases. The statistics furnished are from his individual practice, which are corroborated by that of Drs. Bright and Moore, of Trenton. They are valuable, as far as they go, but do not give specifically the number of cases nor the number of deaths, and there being no official record from which to obtain this information, your committee cannot furnish it. Dr. Happel reports ten fatal cases from "reliable sources," some of which occurred in his own practice, and all in District No. 7, in which the town of Trenton is located. The following quotations are from the essay: "From Dr. Moore, living northeast of us in District No. 11, I got information to the following effect: He gave prescriptions to a considerable number of applicants presenting dysenteric symptoms, and, excluding these cases of office practice, he visited and treated twenty-six cases of dysentery from September 15 to November; by far the larger number of his cases occurring from October 1 to 20. Of these twenty-six cases, five proved fatal. From Dr. Bright, in District No. 5, southeast of the town, I learn a state of facts very similar to the above. * * * From October 1 numerous cases (mild as a rule) occurred simultaneously in and around Trenton, among parties who had never been in contact with each other. The universal complaint with all who were sick was enteric trouble, and in four-fifths of these cases dysenteric symptoms were reported. The epidemic was at its worst during the twenty days from Octo-

ber 4 to 23, inclusive. * * * My estimate of the number affected, including mild cases, is that at least 15 per cent. of the population of our city and that portion of the district south of us suffered. Dr. Moore does not think the per centum quite so great in his territory, but Dr. Bright makes about the same estimate, so far as his knowledge of the disease extends."

The etiology of this epidemic cannot be traced to unusual local causes of an unsanitary character, for none existed in and around Trenton. This disease had not prevailed in this locality to any serious extent for years; indeed, there is no record of any such epidemic there. From July 1 to September 15, there was almost a continuous drought. Dr. Happel attributed this epidemic to unusual atmospheric conditions, continued sufficiently long to produce such results. For example, "from September 1 to 10, the average maximum temperature was 93° ; the average temperature at 6 A. M. was $73\frac{1}{2}^{\circ}$, making an average daily variation of 20° . The maximum temperature was 97° , the minimum temperature was 69° , making a variation between the two extremes of 28° . For the five days following the 10th, the average maximum temperature was 72° , the average minimum temperature 63° , making a variation of only 9° , but taking the two extremes at noon on the 13th, the maximum temperature was 94° , and on the evening of the 12th, 55° , thus making the greatest range 38° . On the 15th, as previously stated, a good rain fell, and on the 16th the minimum temperature was 48° and the maximum 71° , a variation of 23° . On the 17th the maximum temperature was 75° , the minimum 52° , a variation of 18° . From the 17th to the 21st the average minimum temperature was 59° , the average maximum 78° , the average variation 19° . The least temperature was 52° on the 17th, and highest 84° on the 20th, thus making the greatest variation 32° . From the 17th to the 22d the morning temperature gradually increased from 66° , whilst the noon temperature rose to 86° on the last named day. From the 22d to the 26th, inclu-

sive, the 6 A. M. temperature gradually increased from 66° to 74° on the 25th, making a difference of 38° between the maximum and minimum temperature in eight days. On the 26th, the maximum temperature dropped to 74°, to be followed at once by a daily increase from 3° to 5° in maximum temperature to the 29th, reaching 86°, giving a variation of 21° between the two extremes of that day. The barometric changes from September 1 to 13 were very slight, and with the exception of the 3d and 4th not falling below 30°, but at the same time the hygrometric variations were decided; especially was this the case on the 4th, when the humidity at 6 A. M. was 88.6, whilst at 2 P. M. it was 37.4—a difference of 51.4. The 14th and 15th were days of considerable barometric changes, with rain on the latter day, followed by a rising barometer and increasing temperature on the 16th. On the 17th a stationary barometer, but humidity varying from 91 at 6 A. M. to 27 at 2 P. M., being a change of 64. On the 26th a falling barometer and increased humidity, the average being 83. * * * The variations in temperature given have been ascertained by comparing the minimum and maximum temperature, as read from a thermometer not exposed in any way to the direct or indirect rays of the sun. If, then, to the variations already given, we add about 20° increase in heat, to which those were exposed that were unprotected from the midday's sun, the gap between the daily minimum and maximum temperature becomes enormous, reaching in some cases to upward of 50°. With this amount of daily variation and its consequent effects upon the human system, I see no trouble in accounting for the epidemic under consideration." These atmospheric conditions may not have been the sole cause of the epidemic, but they were doubtless the main factor which rendered operative other morbid influences.

Clarksville, Montgomery county, had an epidemic of dysentery in the summer and fall of 1881. From the information furnished the Secretary by Dr. C. W. Beaumont,

Health Officer, your committee learns that the first cases occurred about the middle of June, and last cases about the middle of November. "It is estimated that two hundred and fifty cases occurred, and from thirty-five to fifty deaths." This is evidently intended to embrace a large area of country outside of the town of Clarksville. Dr. Beaumont expresses the opinion that a majority of the cases were among the white population, but the death rate was about double among the blacks, in proportion to number of cases. The light mortality among the whites no doubt was due to the more favorable circumstances under which they lived and were treated while sick. He considered the mortality greater among adults than children.

An epidemic of dysentery occurred at Tabernacle and vicinity, in Tipton county, in the latter part of the summer and fall of 1881. From correspondence with Dr. A. L. Elean, resident physician at Tabernacle, the following information is obtained: First case some time in August; number of cases about one hundred and sixty. This included all cases, mild and severe, within a radius of four or five miles. Number of deaths, about twenty or thirty. No official record was kept, and some are known to have died without medical attendance. No difference was noticed in susceptibility of attack between whites and blacks, adults or children, except in teething children, who were more susceptible. The death rate was about one-third greater among the blacks than whites, due, no doubt, to want of proper care and medical attendance, etc. Supposed cause of epidemic, malarial influence, though quinine failed to relieve cases, and was abandoned in treatment. The water supply was from wells and springs, and was never known to have caused an epidemic of any character. This is the first epidemic of dysentery ever known to have occurred in this locality. The cause, no doubt, was a general atmospheric influence, which developed epidemics of this disease about this time in other localities in West Tennessee.

The increased mortality in Memphis from dysentery and diarrhea in 1881 over that of 1880, was doubtless due to the same general atmospheric conditions which caused the above reported epidemics in West Tennessee, though neither of these diseases assumed epidemic proportions in the city. This increased mortality was from the poorer classes of the population of both colors, who are most susceptible to unfavorable health conditions of any character from exposure and improper methods of living. See Annual Report Memphis Board of Health, for 1881-82, showing death rate, causes of death, meteorological tables, etc.

TYPHOID AND TYPHO-MALARIAL FEVERS.

A number of reports were received at the Secretary's office of cases of typho-malarial and continued fevers, showing some confusion as to nomenclature. It seems that protracted cases of miasmatic or malarial fevers have been mistaken by some for typhoid fever, or at least some are not very clear whether they were typhoid or enteric fevers, or simple remittents of a continued or protracted type, presenting some of the symptoms of typhoid fever.

The following list of this class of fevers, with names of reporters, are given: Clarksville, Montgomery county, latter part of summer and fall of 1881, estimated number of cases about fifty, no deaths reported, Dr. C. W. Beaumont. Knoxville, Knox county, number of cases not given, eight deaths, Dr. S. B. Boyd. Seewee, Meigs county, in November and December, 1881, seventeen cases, three deaths, Dr. E. S. Shipley. Coultersville, thirty cases, few deaths, Dr. V. J. Kennedy. Martin, in November, 1881, twenty cases, one death, Dr. C. M. Sebastian. Lafayette, September 12 to December 7, Dr. W. L. Kirby. Wolf Creek, May to December, forty cases, twelve deaths, Dr. W. L. Cooper. A number of reporters remark that those who suffered from dysentery in the summer and autumn, were more liable to the fever than others, the fever following the dysentery, and in many cases proving equally

bad. The following report from Dr. Charles P. Kemp, resident physician at the English colony, Rugby, gives a detailed and very interesting account of the epidemic of typhoid fever at that place in the summer of 1881:

"RUGBY, MORGAN CO., TENN., Dec. 12, 1881

"W. M. Clark, M.D., Secretary State Board of Health, Nashville, Tenn.

"DEAR SIR—Enclosed herewith I send you statistics of the recent outbreak of typhoid fever in Rugby. Typhoid fever appeared in Rugby the last week in July, and ceased completely the first week in November, 1881. It came suddenly, attacking simultaneously a number of people living in the Hotel Tabard, including many who boarded at or frequented the hotel, but did not sleep within its walls. The origin of the outbreak was traced to the impure water used for domestic and drinking purposes, drawn from a tubular well near the hotel, as will appear by the evidence submitted and herewith sent.* The history of this outbreak of typhoid fever is invested with an especial interest for the medical profession and others interested in sanitary matters

"The Cumberland table-land enjoys a well-merited reputation for the purity of its air, the purity and softness of its water, and its general healthfulness and salubrity, not only as compared with the regions immediately adjacent, but as contrasted with the whole country east of the Mississippi river; and Rugby was especially selected as a site for a town on account of its embracing the best features topographically of the table-land, viz., elevation, picturesque situation, excellent natural drainage, and proximity to two never-failing streams of water. It was a clean, pure spot upon which to build a town. The appearance, therefore, from within, or the introduction from without, of disease of an epidemic character, would seem to be more easily detected and its causes traced *ab novo* than in older towns or less healthy localities; and such in truth is the case in question.

"Rugby exhibited a remarkable immunity from diseases, endemic or imported, up to August 1, 1881, when its population numbered 300 persons; even the great heat of June and July, which proved so fatal elsewhere, brought no undue distress or sickness to Rugby: no cases of sunstroke, a few cases only of heat prostration among young Englishmen unaccustomed to the climate; and but an occasional mild case of diarrhea. The drouth, however, was preparing the

*1. Cincinnati Lancet and Clinic, Aug. 20, 1881, pp. 157 and 160.

2. Rugbians, Sept. 10, 1881.

3. Rugbians, Oct. 1, 1881, containing expert analysis of suspected water.

way for the fever that subsequently became epidemic. (I enclose herewith the record of the meteorological conditions obtaining at Rugby for the five months ending September 30, 1881, including the daily maximum and minimum temperature, the mean daily temperature, the mean daily humidity, and the daily rainfall). The water supply of Rugby, derived entirely from surface springs, two wells, and two or three small cisterns, barely sufficient at the best of times, became a serious matter in July, August and September, not only affecting the Hotel Tabard, where the disease originated, but the whole town. Springs became dry, the wells soon became exhausted, the cisterns were empty, and most householders were reduced to three to six gallons of water for their daily supply for all uses, drinking, culinary, bathing and laundry purposes.

"As soon as the disease was suspected, admonition was given the authorities of the colony, the manager of the hotel and the public at large to use the greatest possible care to obtain pure drinking water, and to boil and filter it before using. On the sixth of August, as the number of cases increased, a small building used as an annex to the hotel and about a thousand feet distant, was equipped as a hospital, and most of the cases transferred to the rooms. This hospital contained seven rooms and ten beds: as it proved insufficient to accommodate the cases during the maximum intensity of the outbreak (August 20-30), three large tents were set up near it, accommodating six beds. An assistant physician and three trained nurses from a Cincinnati hospital were sent to my aid, and with isolation of the cases, disinfection, and especially with systematic and efficient nursing, it is confidently believed four lives were saved that otherwise might have succumbed to the disease. The majority of the patients were convalescent the second week in September, and were removed to a cottage admirably situated for a convalescent home. The hospital was closed October 17, no case then existing in Rugby, and only one case ill with the disease two miles from Rugby, but acquired in the town, September 21, at the hotel.

"Believing with Budd and Liebermeister that typhoid fever is propagated and disseminated by the bowel excreta, and since these excreta as they issue from the body are completely within human control and therefore may be destroyed before being cast away, and the spread of the disease thereby prevented, disinfection of the stools with sulphate of iron mainly, and with occasional use of carbolic acid and permanganate of potassium was insisted upon from the outset, and the digesta buried in trenches, the deposits receiving fresh, dry earth and quick-lime at each delivery at the trench. The hotel was practically abandoned the last of August, and was ordered closed completely the third week in September.

The use of water from the wells was ordered discontinued August 10, but believing this order was not strictly enforced, a lock was placed upon it September 1, and eventually the pump was removed. Every bedroom in the Hotel Tabard used by a person ill with typhoid fever, and all others known or suspected to have been used by such persons, were thoroughly disinfected by burning sulphur, the carpets, mattresses and comforts burned, the floors, bedsteads, furniture and painted work scoured with abundant soap and chloride of lime, the walls kalsomined, the earth closets renovated, painted, and new tubs, thoroughly tarred on the inside, provided, and the hotel generally washed, scoured, kalsomined, painted, re-furnished and equipped anew and put in complete order for the safety and security of subsequent guests or inmates, and reopened November 7, 1881. A new tubular well has been sunk 100 feet into the sandstone rock, furnishing a good supply of pure water, and distant from the hotel 300 feet, in a situation not likely ever to become contaminated with surface or other drainage or impurities of any sort. Two months nearly have now elapsed since the hospital was closed, and no new cases have occurred, and no other disease has appeared in Rugby, and no sickness of any kind exists at this time. It may be justly claimed therefore that Rugby has regained its normal condition, vindicating its reputation as a healthy place.

"RECAPITULATION of Report of Typhoid Fever at Rugby, Morgan County, Tenn., Aug. 1 to Nov. 6, 1881: Number of cases, 35, average duration of each case in days, 30.5; number of deaths, 7; shortest period ending in convalescence, 21 days, longest period ending in convalescence, 66 days; shortest period ending in death, 14 days; longest period ending in death, 46 days.

"CAUSES.—Number of cases directly and undoubtedly traced to well of Hotel Tabard, 27; number traced to suspected milk, 4, number untraced, 4.

"NATIVITY. — English, 27; American, 8.

"SEX.—Males, 28, females, 7. First appearance of the disease, July 28, 1881; entire disappearance of the disease Nov. 6, 1881, last cases acquired (well Tabard) Sept. 21, 1881.

"ANALYSIS OF DEATH COMPLICATIONS.—Of the seven deaths, one was complicated with secondary syphilis; one with previous recent history of yellow fever (in Brazil), one was the subject of asthma; two were associated with dissolute habits and intemperance; two remaining were entirely healthy.

"RUGBY WEATHER REPORT for August, 1881 (table omitted): Mean monthly temperature, 74.4 Fahr.; mean monthly relative humidity (100 being saturation), 69, total rainfall for the month

1.265 inches; lowest relative humidity August 12, 2 P. M., 17 per cent.; greatest difference between wet and dry bulbs, August 12, 2 P. M., 29 deg.; highest barometer Aug. 30, 2 P. M., 26.67, lowest barometer, August 19, 7 A. M., 28.28. Barometric readings not corrected for temperature or elevation."

I am, dear sir, very respectfully, your obedient servant,

CHAS. P. KEMP, A.M., M.D.

The *Rugbian*, September 10, 1881, states conclusively that the water used by the inmates of the Hotel Tabard, both for drinking and culinary purposes, had been poisoned by percolations from a cesspool located seventy-five feet distant. From the same editorial I make the following extract: "Two of the leading physicians of Cincinnati, Dr. Whitaker and Dr. Underhill, were telegraphed for at the commencement of the outbreak, and assisted by Dr. Kemp, our resident physician, made a thorough and careful examination of this question. The result of their enquiries point to the well at the Tabard Hotel as the root of the evil." An article in the Cincinnati *Lancet and Clinic*, of August 20, 1881, on this epidemic, by Dr. Jas. L. Whitaker, concludes: "The contamination of the drinking water was so very obvious that we did not think it necessary to subject it to chemical analysis. It is useless to state that every suggestion tending towards the relief of the cases and the removal of the cause, was immediately acted upon by the authorities of the place."

Murfreesboro, Rutherford county, thirty miles southeast of Nashville, on the N., C. & St. L. Railroad, was visited by an epidemic of typhoid fever in 1881 and 1882. From a report furnished the Secretary by Dr. J. B. Murfree, President of the Board of Health, the following extracts are made:

"In the fall of 1881 and the winter and spring of 1882, an epidemic of typhoid fever prevailed in Murfreesboro. The first case was observed about the third of July, 1881, and occurred in a healthy locality, with no special unsanitary surroundings or local cause of disease. * * * The location of Murfreesboro is pleasant and healthy, and in the past has been as free from the prevalence of epidemics as a majority of the inland towns of the

State. The water supply is from cisterns, wells and springs, and is generally good and abundant. * * * The cause of this disease was a general epidemic influence sweeping over the country, and not local. The disease prevailed in Nashville the preceding spring, and during the summer all along the line of railroad from that city to Murfreesboro, and afterwards beyond the last named place. There were treated in the town and vicinity, ninety-one cases, with sixteen deaths."

A great part of the Doctor's report to the Secretary was taken up with the treatment of the disease—its medication—which is irrelevant to this report.

SMALL-POX.

Though this disease appeared in the State in two places in 1881, and at different times in a number of places in 1882, it was so restricted by isolation of cases, disinfection, vaccination, etc., it did not become widely epidemic in any one locality, though it caused serious apprehension, and the Board was put to some expense. In December, 1881, it was reported at Milan, in Gibson county, being introduced there by a negro from Cairo. Before the disease was recognized, a number of persons, mostly negroes, contracted it. This community being unprovided with an organized Board of Health, and the county authorities not seeming to appreciate properly their responsibility under the law in the event of small-pox appearing, and great uneasiness, amounting almost to a panic, being expressed at the appearance of the disease, the Board instructed its Secretary, Dr. W. M. Clark, to visit Milan and take such steps as might be deemed necessary to prevent further spread of the disease. On his arrival he found eighteen cases among the negro population in the immediate vicinity of the town. He employed Dr. J. S. Henderson, one of the resident physicians of the place, to take charge of the cases and to execute his instructions in regard to preventive measures, and likewise to act as inspector at the depot, to prevent the spread of the infection along the railroad. This was thought a proper precaution to allay ap-

prehension and prevent neighboring towns from quarantining against Milan. These precautions had the desired effect, preventing further spread of the disease and allaying panic. Total number of cases reported, twenty-three, nine of which died. Expense to the Board, including pay of inspector, \$147.50. This is the only instance in which the Board assumed the expense of providing medical attendance for such cases. For the information of all parties interested, and that the responsibility and care of small-pox cases might be placed where it belonged, the Secretary was instructed to publish in several of the leading papers of the State, sections 1729, 1730 and 1731, Thompson & Steger's Revised Laws of Tennessee, which provide that, should small-pox or similar contagious diseases appear in a county, the County Court, or should it not be in session, the judge of the court, shall adopt such measures as may be deemed necessary for the safety of the community.

Records in the Secretary's office show outbreaks of the disease in the following places in 1882: Chattanooga and vicinity, from July 1 to Dec. 31, 229 cases. Knoxville, from Nov. 15 to Dec. 31, 14 cases; 6 white and 8 colored; 6 deaths, one white and 5 colored. Brownsville, from March 5 to Dec. 31, 28 cases, 4 deaths. Edgefield Junction, April 3. Gallatin, June 24. Lebanon, July 18. Salem, August 5. Winchester, Sept. 4. Franklin, Nov. —. Jasper, Nov. —. Centennial Island, Aug. 5, (this island is in the Mississippi river about thirty miles above Memphis), 9 cases and 2 deaths, all negroes. Several of these places were visited by Secretary Clark, and the attention of the county authorities called to the above named sections of the Code of Tennessee. No case of small-pox was reported in Nashville in 1881, but from October 1 to Dec. 31, 1882, there were 42 cases. From May 31 to Dec. 31 there were 112 cases admitted into the Davidson county small-pox hospital, of which 36 died. Through the influence of the State Board of Health, at its meeting in July, 1882, the county officials of

Davidson county were induced to build a new hospital for the better accommodation of this disease, the old one being unsuited, both in regard to location and construction.

Two cases were reported in Memphis in 1881 ; they were promptly removed to the Shelby county small-pox hospital, and proper measures adopted by the health authorities to prevent the spread of the infection. The following extract is taken from the Fourth Annual Report, Board of Health (city of Memphis) : "Small-pox has prevailed in many localities through the country—in some places to an alarming extent—and though a number of cases have been introduced into the city, from some of which, at different times, a number of our resident population (mostly negroes) have contracted the disease, by prompt removal of some cases to the small-pox hospital and rigid isolation of others, together with other means of prevention, such as disinfection, vaccination, etc., the spread of the disease was controlled, and the city protected from a general epidemic. During the year 348 cases occurred in the city, of which 318 were negroes and 30 whites. Two hundred and sixty-eight of the former and 10 of the latter were promptly sent to the small-pox hospital, they not being able to give satisfactory guarantees that they could be so isolated as to prevent the infection from others. Ten white and fifty colored were allowed to remain at their residences under surveillance of the sanitary police. Total deaths from small-pox for the year in the city, 32, 8 of which were white and 24 colored. Twenty-two cases were reported at the Health Office of non-residents, which were either from the country or were put off of steamboats, all of which were promptly sent to the small-pox hospital. Some of the cases reported as occurring in the city were in fact non-residents, which were not reported for some days after the disease was developed. A public vaccination was ordered in January, it being the second within a year, and 1365 names of persons are recorded at the Health Office as being vaccinated. In

addition to this, that portion of the community which does not come within the scope of a public vaccination was very generally vaccinated by the physicians."

From the register of the Shelby county hospital,* the following is obtained: Total admissions for 1882, 364; white, 29; colored, 335; total deaths for 1882, 161; white, 8; colored, 153; vaccinated, 145; vaccinated and died, 28; not vaccinated, 133. Complications with small-pox: 2 died from pneumonia, 2 from dysentery, 1 premature birth.

It being known that small-pox existed in several of the large cities of the North and was being introduced into the country by immigrants from Europe, every effort in its power was made by the Board to protect the State from the introduction and spread of the disease. At its instance the Superintendent of Public Instruction issued an order that no pupil or teacher be allowed to enter the public schools of the State without being first effectually vaccinated. It issued a circular recommending all Local Boards of Health, municipal and county authorities, to take such steps as may be necessary to secure the vaccination of the entire population by affording free vaccination or otherwise, and that all steamboats, railroad companies and all public works require their employes to be successfully vaccinated; that every community, in its authoritative character, through Boards of Health or otherwise, should use all proper means of quarantine and isolation of cases when they occur, or suspected cases, and also disinfection of infected houses, bedding, clothing, etc. Detailed instructions were given as to the best methods of prevention, the best disinfectants and their uses, and it was urged that the Secretary of the Board be at once notified of the appearance of the disease at any point, that he might render such assistance, by advice or otherwise, as he could. Sections 1729, 1730 and 1731 of

* This Hospital is located four miles south of Memphis, on the Mississippi river, and is under the charge of a physician appointed by the County Court.

the Code, which to many of the magistrates seemed to be unknown, or at least a dead letter, were published and their enforcement urged wherever small-pox existed. It is confidently asserted that by these prompt and vigorous measures a number of widespread epidemics were prevented, for the disease was repeatedly introduced into the State among communities almost totally unprotected by vaccination.

YELLOW FEVER.

No case of yellow fever has occurred or been introduced into the State since the epidemic in Memphis in 1879. As a proper precaution against this much-dreaded disease, the State Board cooperated with the Local Board of Memphis in calling upon the National Board of Health in the springs of 1880, '81, '82 and '83 to establish an inspection service on the Mississippi river and the railroads coming out of New Orleans. But very few cases occurred or were introduced into that city during these years. These were successfully controlled by the health authorities of Louisiana, and no great danger arose from or damage was done by them. It is hoped that a necessity may never arise for more rigid measures than these, and it is believed with proper vigilance along the Gulf coast all danger from yellow fever can be averted. The law creating the State Board of Health places upon it the obligation "to declare quarantine whenever in their judgment the welfare of the public requires it, etc." Your Committee respectfully submit that the necessity for these precautions can only be determined in future by the action taken along the Gulf coast at the ports through which yellow fever has been heretofore introduced into the Mississippi Valley country. As Congress has made no provision for any federal authority to perform this service from year to year during periods of danger, and there is no agreed concert of action between the local health authorities of these different ports and the health authorities in the Mississippi Valley above New Orleans, this Board of Health should be in

the position to adopt such measures as it sees fit, or maintain such an inspection service as was practiced during the past three summers by the National Board of Health. The responsibility and expense of maintaining an inspection station for steamboats on President's Island, and if necessary a quarantine, or an inspection service for railroads entering the State, should not devolve upon the local board of Memphis, but should be a charge of the State Board. With the present appropriation from our Legislature this work could not be done.



BOVINE TUBERCULOSIS,
A FRUITFUL SOURCE OF
HUMAN DISEASE AND DEATH.

BY
J. D. PLUNKET, M. D.,
OF NASHVILLE, TENN.,
MEMBER OF THE STATE BOARD OF HEALTH, AND ITS COM-
MITTEE ON THIS SUBJECT.



BOVINE TUBERCULOSIS.

Dr. Robert Koch, in an address delivered in March, 1882, before the Physiological Society of Berlin, upon "The Etiology of Tubercular Disease," says: "One-seventh of the deaths of the human race are due to tubercular disease," and recently published statistics, while probably below the actual facts, show that, in 1880, there occurred, leaving out fractions, ninety-five thousand deaths from the one single cause—consumption, in the United States alone.

Any influence, then, which tends to bring about so great destruction and distress to the human family deserves certainly the most pains-taking and exhaustive investigation, and, as far as it may be possible, its abatement or mitigation.

To this end, therefore, has this paper been prepared, that the facts herein contained, and which are but recent in their discovery, may be more widely scattered among the people for their information and guidance, and with the hope of obtaining the practical result of establishing, under the sanction of law, a system of inspection by which the danger of partaking of infected meat and milk may be reduced to the minimum.

Certain zoological affinities between man and the lower order of animals have, in recent time, provoked much speculation among philosophers and naturalists. Yet, impressed as we are, no aspect of the subject is so full of practical interest and instruction, so full of weal or woe to the race, as that to be derived from a careful study of the pathological relations of the two. For our present purposes, we

restrict the scope of this paper to a brief consideration of the danger of communicating diseases, especially such as are tuberculous in their nature, to man through the use of food products of infected animals. From a broad statement of fact we learn that the skeletal frame work and internal organization of the higher mammalia are not only morphologically identical with the structure of man, and thus subserve the same purpose in animal economy ; but the blood is similar in chemical composition, contains the same anatomical elements, and is subject to analogous changes in disease ; hence, in the use of food products of infected animals the danger of communicating to man some virulent blood poison is always imminent, for "nowhere in the struggle of life against the manifold causes of disease," it has been truly said, "do we more effectually imperil our health and happiness, than in partaking of animal food of a suspicious character." Much effort has been made in this direction during the recent past, and many facts of importance have been brought to light ; yet, practically, we are but still only upon its threshold, and what occasions most regret is that the accomplished laborers engaged in this wide field of scientific research at this time, are, in reality, but few.

However, it is suggested that the time has now arrived when the sanitarian and physician should no longer neglect it, but, with zeal kindled afresh, press forward to the exploration of this realm in the causation of disease, and thus more accurately survey those boundary lines in pathology which now seem to separate the human maladies from those of our food-producing animals. Here, no doubt, will be realized one of the highest and most important achievements in medical science, as through knowledge thus obtained, we will be able to indicate causes of human disease now scarcely suspected, or but dimly comprehended. Less than fifteen years ago we were utterly ignorant of the fact that milk ever became a carrier of infection—yet, Mr. Earrest

Hart, of London, states that during this short period, and up to 1881, there occurred in England alone, fifty epidemics of typhoid fever, fifteen of scarlet fever, and seven of diphtheria, traced to the use of infected milk.

That the list should end here, and permanently be limited to the three diseases named, there is nothing, in the analogy of epidemics as at present understood, to warrant us for a moment in believing. At a glance, then, are we profoundly impressed with the fact that nowhere exists there greater danger to the public health than is to be found comprehended in the science of dietetics, and no aspect of it demands a more thorough and intelligent supervision, or one more worthy of our daily consideration, than the sanitary condition of the milk and meat we consume, or one better calculated to enhance the cause of sanitary science, than the practical study of those ailments which affect our food-producing animals.

The extent to which the different kinds of diseased meat are liable to be used will depend in a great measure upon the comparative frequency that these infectious maladies occur in a given locality, and the more insidious the nature of the disease the greater the liability of its transmission from animals that are being slaughtered that are more or less affected.

"All meat that would cause sickness, disease, or death in man, if partaken as food, must be regarded in the light of sanitary science as diseased, and consequently unfit for human use, in any form." Meat possessing such qualities must come from an animal affected with some form of an infectious malady, the germs of which are contained in the flesh, and are liable to be transmitted; for a disease in which a contagious virus is developed during its course, or a virulent principal generated in the blood, renders the meat from all animals thus affected exceedingly dangerous as an article of food. "Meat is not materially affected by the entozoic maladies of animals,

unless the parasite, in some stage of its existence, makes its abode in the flesh, and has not been destroyed by cooking." Practically, then, from this we conclude that there are but few diseases which absolutely render these animal supplies unfit for human use so far as yet known. prominent among which have been mentioned tuberculosis, malignant anthrax, small-pox, erysipelas, hydrophobia, and the two parasitic affections* caused by the *trichina spiralis* and the measles tape-worms. There are, however, other maladies from which our slaughtered animals are liable to have suffered, and which may greatly impoverish the nutritive quality of the meat, and thus render it unpleasant in taste and general appearance, but if the flesh contains no animal poisons, or other morbid products, no harm can come from its use, so far as we now know, when served upon our table. And even a diseased article, when thoroughly cooked, may not prove injurious to one whose digestive powers are active. Many varieties of diseased meat are so patent that even by the dexterity of the butcher's art it is impossible to disguise them. Measly pork and beef, for instance, are easily detected by the unaided eye; but the parasitic contamination of such meat is often overlooked in the absence of official inspection or sufficient popular information regarding it, and consequently there is ever present an opportunity for a tape-worm to become initiated in all who may partake of it. The tubercular deposits, we are informed, which are found at times upon the pleural membrane lining the chest cavity of the animal, thereby causing the lungs to adhere to the ribs or along the internal walls of the abdomen, are sufficient evidence alone to condemn the carcass.

However, without a careful inquiry into the history of the article, or a microscopic inspection, it is no easy matter in all cases to decide whether meat is possessed of injurious qualities or not.

Take, for example, trichinous pork and any of the many

cases following its use; none of the victims ever suspected the meat until a peculiar form of sickness made its appearance, involving all who partook of it, and we are informed this is also true of black leg veal and other fine looking specimens of meat that are affected with anthrax poison, and probably still other infections not yet fully made out.

To what extent trichinosis exists among the hogs of Tennessee, we have no positive information beyond the fact that it does exist in some degree, but as the larger part of the pork used in this State is imported from points north and west of us, principally from Indianapolis and Chicago, it may not be inappropriate to here digress a moment and give some facts as to the prevalence of trichinosis in the hogs found in the region from which the pork-packers of these places largely derive their supplies.

It will suffice for our present purpose to take, for illustration upon this point, the situation as we find it in the State of Indiana alone.

Dr. G. Sutton, of Aurora, Ind., says, in a report made to the American Medical Association, at its meeting last May, "We know at the present time that there is a desire to suppress facts in relation to the existence of trichina in our pork, but after an experience of ten years, in which I have examined a large amount of pork, I can say that from three to sixteen per cent. of the hogs in southeastern Indiana are infested with this parasite. The prevalence of the disease among the hogs varies greatly in different localities. I know that in one instance pork that was brought to my office by a farmer for examination was found to be filled with trichina. This pork, instead of being used in his family, we have the most conclusive evidence, was at once shipped to Cincinnati and sold in the market. Drs. Harding and Robbin, of Lawrenceburgh, informed me that they had microscopically examined specimens from two hundred and forty-five different hogs slaughtered in the vicinity of Lawrenceburgh, and found trichina present in forty of the

specimens, making about sixteen and one-third per cent. of all examined. Drs. Gatch and Miller, of Lawrenceburgh, also informed me that they had examined with a microscope two hundred hogs killed for pork, and found trichina in thirteen, making about six per cent. Dr. G. V. Stevenson, of Rising Sun, also wrote to me that he had found trichina in pork killed in Ohio county; and Dr. Sale, of Dillsborough, told me that he had found trichina in pork killed in that section of the country.

"We have seen notices recently, in the newspapers, that trichina had been discovered, and that trichinosis had prevailed at Liberty, South Bend, Fort Wayne, Decatur, and other places in Indiana.

"When we bear in mind that upwards of 5,000,000 of hogs are slaughtered and packed in the Western States, not including those which are put up for family use by the farmers; that if four per cent. of this pork is diseased, which we believe to be a low estimate, we have 221,484 diseased hogs put annually upon the market, or at an average of two hundred pounds to the hog, 44,296,800 pounds of diseased meat, every ounce of which, under favorable circumstances, is capable of producing disease."

Many cases of sickness which are diagnosed as typhoid fever, chronic diarrhea, etc., there are good grounds for believing, are produced by trichina.

Inspection properly performed by one who is in every way fully qualified and equipped is the most reliable means of averting the danger to health and life consequent upon partaking of animal food which is diseased, and a danger, too, that is not only, we find, unseen, but unsuspected. It is to the consideration of this danger, as it manifests itself particularly in the possible transmission of bovine tuberculosis to man, through the use of meat and milk as food, that I will now direct your attention briefly.

Reasons for suspecting that tuberculosis of the bovine species may be transmitted to man have been suggested

from time to time, but especially since the demonstration of the infectious origin of tuberculosis by Villemin in 1865. The first ground of our suspicion or alarm is that tubercle, or, as it is called, pearl-disease or consumption, is quite common in the bovine species of animals to which we trust so implicitly—one might almost say blindly—for a large part of our food; and as the production of tuberculosis is shown, by the recent discovery of Koch, to be dependent upon the presence of distinctive bacilli, which bacilli are found to exist in abundance in the pearl-nodules, as they appear in the pearly distemper of bovine animals, the identification of tuberculosis with the pearl-disease is thus clearly established. How prevalent the disease is among the cattle of Tennessee cannot at this time be stated with any approach to accuracy, as after an extensive inquiry among the dairymen and farmers in different localities throughout the State, we have failed to elicit any information which would justify our attempting even an approximation. In a large number of instances the reply came, "My attention having never been called to the subject, I have never observed particularly;" while others again stated, especially dairymen, that "occasionally they have lost a cow from consumption."

"Those who know nothing," says a distinguished writer upon veterinary medicine, "of tuberculosis, may question its claim to a place amongst what may be called the four bovine scourges, viz.: Pleuro-pneumonia, Eczema epizootica (Foot-and-Mouth disease), Cattle-plague (Rinderpest) and Tuberculosis (Pearl-disease or Consumption), but, as will be seen on studying it, it is more insidious (and equally deadly) to the stock owner than either of the other three diseases."

Tuberculosis is an inherited and chronic disease which may be present for years in the body of an animal and give rise to no symptoms. The distinctive formations of the serous membranes—the pearl-nodules of the disease—we are informed, "are sometimes found in animals that have been

slaughtered in perfect condition." But the disease in its worst form, or so far advanced as to give rise to signs and symptoms during life, "is mostly met with in milch cows, and more especially in old cows."

"The cow-houses," it is stated, "in or near large towns contained the largest proportion of diseased animals suffering from tuberculosis." The close confinement, the artificial food, the want of pure air, pure water and sunlight, to which they are here subjected, all tend to develop the disease. The cows are milked as long as it is profitable to milk them, and they are then sold, out of the herd, probably, to the butchers.

Some breeds are more liable to the disease than others, and it is said there are breeds which are entirely free from the disease.

Prof. Thomas Walley, of Edinburgh, says: "The breed of animals which, in my experience, are most subject to tubercle, are Alderneys, Guerneys (the latter in a much less degree, however, than the former), and Short-horns, amongst home cattle, and amongst foreign cattle, the Danish. It must not, however, be assumed from this remark that all Short-horns are equally predisposed; it is only in particular districts and with particular strains that this holds good. Neither would I have it assumed that all pure and highly-cultured strains are contaminated; but I do, with confidence, assert this—that quite half, if not more than half, of the well-known strains are tainted with the leprosy of scrofula. With regard to the majority of our pure breeds, I can only speak positively of those with which I am practically acquainted. In Highland cattle I have never seen tubercle, though it is very possible that those who have opportunities of seeing autopsies of old cows may have done so. In some districts Herefords are peculiarly exempt from the disease; while in others, as in some parts of North Wales, I have seen scrofula frequently developed. The old smoky-faced Montgomeryshire cattle, few though they were, during my residence amongst them, I seldom saw affected, and the same

remark holds good with reference to the old Staffordshire Long-horns. The Ayrshires in certain districts are somewhat prone to tubercle, while in others they are free from it; but, under the influence of change of climate, they become particularly predisposed. The polled Aberdeenshires seem to be particularly exempt, at least I have never seen tubercle in them; and I have it from Mr. McCombie, that he has never seen it in any cattle of the polled breed, however closely bred."

Similar information, as regards the effects of climate and locality upon the different strains in Tennessee, is especially to be desired.

Virchow places the average of the disease to be found in the cattle of Prussia at from fifteen to twenty per cent., but the amount of disease is generally put at a higher figure than that. Without adopting the most alarming estimate of the prevalence of the pearl-disease or consumption in the bovine species, there need be no hesitation in concluding that the milk of cows in a more or less advanced state of the tubercular disease is constantly being consumed by infants and adults; that, in fact, the species of domestic animals which is so much in our confidence that we even drink of one of its secretions and eat of its flesh, and sometimes even of its viscera, is a species that is widely tainted with tubercular disease. That alone is fact enough to cause uneasiness. Add to that the sort of evidence that has been obtained by experiments on animals, and we seem to have the best grounds for believing that tubercle may come to the human species from the cow. Some pathologists have proceeded by inoculating the tuberculous matter from the cow under the skin of the rabbit, or other animal, or by injecting it into their veins; while others have experimented by feeding certain of the common domestic animals with the milk of tuberculous cows, or with the actual tubercle-nodules. If all the experiments have not succeeded, a sufficient number of them have to prove that animals may be made tuberculous, either

by inoculation with tuberculous matter from the cow, or by feeding with the tuberculous substance, and even with the milk of the diseased animal.

That tuberculosis, as it exists in cattle, says Dr. Cornelius B. Fox, of South Essex, "can be conveyed to calves, rabbits, guinea pigs, etc., by the milk of an animal suffering from the disease, has been proven over and over again by Chaureau, Klebs, Gerlach, Leisering, Zurn, Bollinger and others." Klebs asserts that, when milk has been deprived of its solid particles, the tubercular virus is still found in the fluid portion, that it is not destroyed by cooking, and that it is all the more active as the disease has reached to an advanced stage. He is of opinion that the disease may be developed in children through the medium of the milk. That such milk is liable to excite diarrhea and debility in children has been recognized.

Such then are the established facts which create a presumption that the enormous consumption of cow's milk by infants particularly, and by adults, as well as the use of inferior kinds of meat—especially as is bought by the poor—is not unattended with risk, but on the contrary, and gives special significance to the fact, as shown by Fox and others recently, that but twenty-five per cent. of the cases of consumption in man are due to hereditary transmission, while the other seventy-five per cent. are caused by unsanitary influences among which should be placed prominently unwholesome food, of which infectious milk and meat will be found, we have no doubt, to be most prolific.

Then, that with increasing prevalence there exists among our cattle, especially among our milch cows, a malignant disease, which publicly is almost unknown, and one we have seen, which sustains the relation of cause and effect, in some measure at least, to that which, possibly, is the most fruitful source of human disease and death, there exists no longer room for doubt.

The subject demands, therefore, the immediate attention of our public authorities, State and municipal, and should receive a candid consideration, and the deliberation of our most enlightened minds and professional experts in the devising and enforcing of such sanitary measures as will protect our tables, control the traffic, and stamp out the disease.

ABATTOIRS.

BY G. B. THORNTON, M. D.

Your committee, assigned the duty of reporting upon *abattoirs*, and offering such suggestions to Local Boards of Health as may be thought advisable, has been unable to obtain from the principal cities and towns in the State as much information on the subject of slaughter-houses, stock-yards and the number of live stock slaughtered annually for market, as desired. However, the information obtained by correspondence, while limited in extent, and deficient in detail, is sufficient to justify the action of this Board in urging upon Local Boards the necessity for persistent effort in improving the sanitary condition of many, and insisting upon changing the location of others.

Slaughter-houses and stock yards are necessary adjuncts to all cities, and unless eligibly located in reference to surroundings, and properly kept as to cleanliness, become public nuisances and just cause for complaint from those residing near or affected by the drainage from them. Complaints against these necessary industries have been made from the time of the Roman Emperors to the present day, and in the majority of instances, both in this country and in Europe, necessary reforms have been attended with great difficulties and delay. In all instances in this country, most notably, New York City, Jersey City, Philadelphia, Chicago, Pittsburg, Cincinnati, Boston and New Orleans, where the *abattoir* system has been adopted, it has proven far preferable to that of individual slaughter-houses from every point of view. It has proven alike advantageous to those directly interested and engaged in the business and to

the community at large. Under this system a proper sanitary surveillance can be exercised over every feature of the business, which is impracticable with the present arrangement of individual slaughter-houses with their accompanying stock-yards. It is a well known fact that many diseased animals, and others in improper condition, though not diseased, are killed for the markets, and the meat sold to consumers as unobjectionable, though unfit for food. In many instances this is done ignorantly, and of course innocently of wrong doing, in others with a full knowledge of the fact. Cases of tapeworm, trichina spiralis and low grades of fever, etc., have been correctly attributed to eating impure meats, though fresh from the slaughter-houses.

There is an old saying that there are tricks in all trades, and, therefore, it is no reflection upon those engaged in this business to say that it is not an exception to the general rule. Municipal ordinance should so regulate this business as to require a competent inspection of all animals designed for the public markets, and also of the meat before it is furnished to consumers. In the cities above mentioned in this country, and others in Europe, where the *abattoir* system is in force and this inspection service practiced, it has proven highly beneficial and satisfactory to all parties interested. It is a salutary check upon unprincipled parties engaged in the business, and affords protection to those desirous of fair dealing.

The location of stock-yards and slaughter-houses, or *abattoirs*, should be so ordered that the water supply is abundant at all seasons, and that the drainage is so arranged as to flow away from the city they supply. The four principal cities in Tennessee—Nashville, Memphis, Knoxville and Chattanooga—being located on large rivers, are afforded all necessary natural facilities for proper location and perfecting the *abattoir* system after the most approved plans. This location should be at some suitable point below each city, accessible by roadway, railway and river.

Other industries which have their origin from slaughter-houses, such as tanneries, soap factories, rendering and fertilizing establishments, packing-houses, etc., which contribute to the growth of cities, and should be encouraged by them, would find it to their interest to locate in the immediate vicinity of the *abattoirs*. These necessary industries, under some circumstances, have been adjudged public nuisances by the courts, and are so classified in works on public hygiene. When located as above indicated, and operated under proper sanitary regulations, they are public benefits, affording safe investment for capital and paying work to many operatives. All such enterprises contribute to the wealth of the State and the prosperity of the communities in which they are located, and should receive every encouragement from health officials compatible with the preservation of the public health. Efforts have been made in two of the cities named—Nashville and Memphis—to concentrate all slaughter-houses in one general *abattoir* for each city, but as yet nothing definite has been determined. In Memphis, within the past three years, several slaughter-houses have been declared public nuisances on account of their objectionable locations, and discontinued. A charter has been applied for by a joint stock company known as the "Memphis Abattoir and Stock-Yard Company," with the view of concentrating this business at the most desirable point south of the city, on the Mississippi river, but owing to some obstacle not yet removed, the enterprise has, so far, failed of consummation.

NOTE.—For details of construction of *abattoirs* see "Buck's Hygiene," and also special reports on this subject from the cities above named.

GEOLOGICAL AND TOPOGRAPHICAL
FEATURES OF TENNESSEE

—IN—

RELATION TO DISEASE;

OR, A CONTRIBUTION TO AN EXPOSITION OF THE EIGHT NATURAL DIVISIONS
OF TENNESSEE, IN THEIR RELATIONS TO DISEASE, OR,
CONVERSELY, PUBLIC HEALTH.

BEING A REPORT TO THE
STATE BOARD OF HEALTH,

—BY—

JAMES M. SAFFORD, PH.D., M.D.,

MEMBER OF THE BOARD.

PART SECOND—CUMBERLAND PLATEAU.



THE NATURAL DIVISIONS OF TENNESSEE IN THEIR RELATION TO DISEASE.

[Continued from page 290 of the First Report (1877-80) of the State Board of Health.]

Having considered two of the natural divisions of Tennessee, the Unaka Mountain region and the Valley of East Tennessee, we come next, in our course westward, to the third great division, the Cumberland Table-land, often designated as Cumberland Mountain. This division is, as before stated,* a plateau with a broad and generally level top, standing in bold relief above the lower areas on each side, the lands of the Valley of East Tennessee on the east, and the Rim lands of Middle Tennessee on the west, 1,000 feet above these and 2,000 above the sea. In the southern part of the State the division is split into two great arms, or prongs, by the deep and narrow Sequatchie valley. Of these, the eastern arm is known as Walden's Ridge,† and the western, locally, as "Cumberland Mountain." Sewanee University, Monteagle, Tracy City, Beersheba Springs, the towns of Alton and Spencer are located upon the latter. As a whole, the division is sharply defined, and extends obliquely, in a southwesterly and northeasterly course, quite across the State, from Kentucky on the north, to Georgia and Alabama on the south. It is, indeed, possible for a traveler to be guided from Kentucky to Alabama all the way on the high top and through the flat woods of this division without once suspecting his elevation or knowing that his course lay upon a mountain. And

* See Enumeration of the Natural Divisions of the State, First Report, page 211.

† The Raccoon Mountains, south of the Tennessee river, belong to the range of Walden's Ridge.

further, it may be noted that this division, rising so boldly above the general level of the State, and comparatively barren, has always been a serious obstacle in the way of free intercourse between two of the wealthy and populous sections of Tennessee—the great Valley of East Tennessee on the east, and the fertile Central Basin, with the best of the Rim lands, on the west. Even now no railroad crosses it within the State. To pass from Knoxville to Nashville it is necessary to make a great detour to the south through Alabama.

The form, relative size and position of the Table-land may be made out by referring to the diagram and map of the State given in the First Report (page 240). At almost all points on both sides the surface suddenly breaks off in sandstone cliffs from 20 to 200 feet in height, giving everywhere a sharp and prominent edge or brow to the division. Its eastern edge is a nearly direct line, really a gently and a gracefully curving one; the western is greatly broken, a fringed one, incised by deep coves and valleys, which are separated by finger-like spurs jutting to the west.*

Along the Kentucky and Tennessee line the Table-land is about seventy-one miles wide. It becomes narrower southward. Across it, along the southern boundary of the State, including the Raccoon mountain portion and Sequatchie Valley it is fifty miles. Altogether, the division

*The great difference in the outlines of the two edges of the Table-land, respectively, is due primarily to two geological facts or conditions. First, that the cap-strata of the whole area are sandstones resting upon a great basis of limestone; and secondly, that along the eastern edge these strata have been upturned in long lines and stand at high angles, while along the western they are undisturbed and horizontal. The tilted plates of sandstone of the eastern edge have to a great extent arrested erosion, at least so far as making deep indentations in the mountain are concerned, while at the western, the same strata, being horizontal and elevated, have been more or less undermined by the solution and removal of the underlying limestone, the cap-sandstones breaking down irregularly. Where the undermining has been greatest, there we have the deepest recesses (coves or gorges); where least, jutting points or spurs.

proper covers an area of 5,100 square miles, equal to about an eighth of the State. Within its limit are included Scott, Morgan and Cumberland counties, and the greater part, severally, of Bledsoe, Sequatchie, Marion, Fentress, Van Buren and Grundy, with considerable portions of Claiborne, Campbell, Anderson, Rhea and Hamilton, on the east, and of Overton, Putnam, White, Warren, Coffee and Franklin, on the west. The surface of the Table-land is often flat for miles, with an open growth, mostly of oaks; then again it is rolling and diversified with hills and shallow valleys. In the northeastern part are high ridges, which, sometimes rising a thousand feet above the Table-land, are mountains. Upon the latter division is the Tennessee coal field. Sandstones are the prevailing rocks at top, though shales are sometimes met with outcropping on the slopes.

The soils are thin, sandy and porous, and are decidedly poor, as compared with the limestone areas to the east and west. In some sections they afford a pasturage of wild native grasses. Apples and grapes often do well, and so do garden vegetables and Irish potatoes, provided manure is used freely. Here and there, on slopes, at the foot of knobs or ridges and along streams, more fertile areas are found, especially in the northern counties, where land is cultivated, but in the aggregate, farming operations on the Table-land amount to but little. In general the population is sparse, and wide regions without an inhabitant are traversed. Strangers coming into the State with a view to purchasing farming lands must, if their eyes be turned towards the Table-land, see for themselves, and even then, be slow in locating. Unless the timber or stone coal can be made available, or, to put it in other words, for mere farming purposes, it would often be far better to pay \$10 an acre for moderately worn lands in the limestone regions of the State than to accept these mountain lands as a gift. The sandy soils are too often not retentive of manure, and year by year the fertilizing additions filter away and are

lost. These are general characteristics; exceptional areas are indicated above.

In spite, however, of the discount upon its agricultural capabilities, "the mountain" has decided attractions which have made it a region of interest to our own people, and to others of the Southern States. Owing to its elevation, its comparatively cool summer temperatures, its pure air and freestone waters, its mineral springs, its wild, flat woods, and its very isolation, it has been for years, more than any other large section of the State, a region of summer retreats. Before the war its attractiveness in these respects was fully appreciated. Hundreds of summer resorts, public and private, were to be found dotted everywhere over its great expanse. Much the larger number were temporary structures, often log cabins built at romantic spots, close by springs of crystal freestone or chalybeate waters. Many were so located near the precipitous breaks of the Table-land as to command the grandest views. Here the well-to-do families of the valleys, with a due quota of servants, would pass the hot season in delightful ease, away from the push and work of the plantation or the business of the town. Bon Air, in White county, Beersheba, in Grundy, and Lookout, in Hamilton, were among the points at which hotels existed. The first, at the margin of the mountain, right where the old Nashville and Knoxville stage road, after a long and steep ascent, first reached the top, is famous in the annals of the pleasure, rest, and health seekers of bygone days. Now, all is desolation there, and little remains to attest the former existence of galleries and halls alive with guests from many a Southern State. Old men now sing the praises of Bon Air, recall the hours they so much enjoyed, tell of its sandstone cliffs and mountain walks, dwell on the grandeur of the low-lying and wide-spreading panoramic view seen from its heights—a world of plantations and wooded plains reaching to the north into Kentucky, to the south into Alabama, and to the west indefinitely. We have reason to think that

Bon Air will soon again be rebuilt, reinstated, and become as famous as of yore.

But I do not mean to say that the mountain at this time is lacking in places for summer rest and recuperation. The trains of two railroads run this day for miles upon its top making access easy to all points along their lines. First, in the southern part of the State, is the Sewanee coal road; on this, right at the edge of the mountain, and in the native woods, is the University of the South, with its classic halls, its grounds and walks and cottages, altogether a delightful health-giving village, with a people whose refinement and courtesy make the visitor at home and attune him to enjoy to the utmost the pure air and grand scenery of the mountain's margin. Then, on the same road, and really in the same woods, is Monteagle, the hotel and grounds of the Southern Sunday-school Assembly. Here are a hundred acres laid out in parks, drives, children's play grounds, garden and building lots, with amphitheatres, lecture halls, and numerous cottages—a charming summer home for Christian and intellectual people of the South who desire to combine a season of rest with a work of beneficence, surrounded by the bracing and healthy air of this mountain Table-land. Then follows, at the end of the road, Tracy City, interesting to the tourist for its mines of stone-coal and its smoking, black and blazing ovens, whence coke for iron-making is delivered. Then, again, leaving this and for many miles beyond the railroad, through the woods and over the flat mountain, is Beersheba, of ante-bellum age, posted on a precipice which overlooks the deep valley of Collins river, an extensive hotel-villa, where many of the weary and overheated of the valleys yearly become young again in the cool healthful air.

The other railroad, on the mountain for a part of its way, is the Cincinnati Southern. This is in the northern part of the State, and makes accessible numberless spots to which the elevation, the open woods, the elastic air, the tranquil

surroundings impart the common magnetic attractiveness which the summer roamer feels and often cannot resist. Near the line of this road is Rugby, a village located in consequence partly of the magnetism to which we have referred, and which deserves to grow, if pluck and energy have any worth. Here the health-seeker, besides enjoying the invigorating air, the cool water and the healthful climate of the Table-land, will find himself in a cultivated, high-toned community, where religion, science and refinement have an abiding place, and will make his stay the more a pleasure.

And for Lookout, in the southern part of the State again, the grand old mountain, a railway for itself alone is promised. How much this will do to enhance its interest and still further make alive its crest in the summer time can only be appreciated by those who know something of the fascinations of this cloud-land locality.

There are, finally, many humble watering places and summer boarding houses, clean and neat, with superb chalybeate and free-stone springs, on the wide expanse of the Cumberland Table-land other than those referred to, which, if less pretentious, are not the less satisfactory to those who visit them. Furthermore, here and there a village is met with, some of them county towns, whose citizens are hospitable, love their homes and their mountain freedom, and would not exchange them for the better lands and restraints of the valleys.

The climate of the Table-land does not appear to differ materially from that of the adjacent section of the State, excepting in the matter of temperature. Our data at present at hand for making comparisons is very imperfect, but from the best we have the temperature of the mountain in the summer season—the characteristic season—is from 2° to 3° less (comparing points on the same parallel) than that of the Valley of East Tennessee, and from $4^{\circ}.5$ to 5° less than that of the Central Basin. This difference in temperature

is due chiefly to difference in elevation. It is to be noted, also, that the contrasts in temperature are much greater at night than in midday. In the latter case the Table-land is but $2^{\circ}.5$ or 3° cooler than in the Central Basin, while the nights are as much as $6^{\circ}.5$ to 7° cooler. The means of spring and autumn, compared with those of the Basin, will be found most likely to differ by about half as much as those of the summer. Those of the winter will differ still less, there being in this season a greater approach to uniformity throughout the State.

The relation of the Table-land to health has been several times incidentally referred to. The testimony of lowlanders as to its salubrious air and generally favorable climatic and sanitary conditions in the summer season is full and explicit. *Ubi mel, ibi apes*. They returned bettered, which is argument enough, even bating all that mere change and rest can do. But how is it with those who reside permanently, summer and winter, upon this high plateau, and with those (the natives) who have never known any other land? What, if any, are the physiological and pathological effects of the diminished pressure and climatic characteristics consequent upon the higher elevation? Are there any diseases peculiar to the country, or any from which it is exempt? The answers to these and similar questions will give the knowledge desired, and it is to intelligent physicians and observing laymen, who know the mountain and its people, that we must look for them. Most fortunately, a former member of this Board, now deceased, whose name we honor, Dr. E. M. Wight, has left us a valuable contribution, bearing, in part, upon the relation of the Table-land to disease, in a pamphlet strikingly entitled, "A People without Consumption, and Some Account of their Country, the Cumberland Table-land." I quote below the parts of this pamphlet having reference to disease; and in connection with this, I am also able to present to the friends of sanitary science and to medical men a characteristic and most satisfactory letter from the pen of Dr. W. K.

Bowling, the perusal of which will greatly interest his many friends. It is fortunate that while Dr. Wight writes of the eastern part of the Table-land, that east of the Sequatchie Valley, Dr. Bowling writes of the western part. The two distinguished physicians, it will be seen, agree in their opinion as to absence of consumption among the native population.*

Dr. Wight says:

"During the ten years that I have practiced medicine in the neighborhood of the Cumberland Table-lands, I have often heard it said that the people on the mountains never had consumption. Occasionally, a traveling newspaper correspondent from the north found his way down through the Cumberlands and wrote back, filled with admiration for their grandeur, their climate, their healthfulness and almost invariably stated that consumption was never known upon these mountains, excepting when brought there by some person foreign to the soil, who, if he came soon enough, usually recovered. Similar information came to me in such a variety of ways and number of instances, that I determined, some four years ago, when the attempt to get a State Board of Health organized was first discussed by a few medical men of our State, that I would make an investigation of this matter. These observations have extended over that whole time, and have been made with great care and as much accuracy as possible; and to my own astonishment and delight, I have become convinced that pulmonary consumption does not exist among the people native and resident to the Table-lands of the Cumberland mountains.

"In the performance of the work which has enabled me to arrive at this conclusion, I have had the generous assistance of more than twenty physicians, who, have been many years in practice in the vicinity of these mountains. Their knowledge of the diseases which had occurred there, extended over a period of more than forty years. Some of these physicians have reported the knowledge of the occurrence of deaths from consumption on the Table-lands, but when carefully inquired into, they have invariably found that the person dying was not a native of the mountains, but a sojourner in search of health.

* The full elaboration of the facts bearing on the geographical and topographical distribution of diseases, gathered by the census of 1880, will, when completed, supply interesting information as to the healthfulness of the Table-land.

"In answer to the question, 'How many cases of pulmonary consumption have you known to occur on Walden's ridge, among the people native to the mountains?' eleven physicians say, 'Not one.' All of these have been engaged in practice there more than three years, four of them more than ten years, one of them more than twenty, and one of them more than forty years. All the physicians of whom inquiries have been made are now residents, or have been, of the valleys contiguous to Walden's ridge, and know the mountain people well. Four other physicians, in answer to the same question say that they have known from one to four cases, numbering eleven in all, but had not ascertained whether five of them were born and raised on the mountains or not. The names and places of death of all these cases were given, and I have traced their history and found that but three of them were "natives," or had lived there more than five years, and that one of these was fifty-seven years of age when she died, and had suffered from cancer for three years before her death. The two others both died within six months after returning home from long service in the army, where both contracted their disease.

"All these investigations have been made with more particular reference to that part of the Cumberland known as Walden's ridge than to the mountains as a whole. This ridge is of equal elevation, and of very similar character as the main Cumberland range in the southern part of Tennessee, northwest Georgia and northeast Alabama and what is true of this particular part of the great Cumberland table is, in the main, true of the remainder."

"The question, 'What is the principal food of the people who live on these mountains?' has been asked by me several hundred times. The almost invariable answer has been, "Corn bread, bacon and coffee." Occasionally biscuits and game have been mentioned in the answers. All food is eaten hot. Coffee is usually an accompaniment of all three meals, and is drunk without cream and often without sugar. Some families eat beef and mutton for one or two of the colder months in the year on rare occasions, though beef is commonly considered 'onfit to go upon,' as I was told upon several occasions and mutton sustains less reputation. Chickens are used for food while they are young and tender enough to fry, on occasions of quarterly meetings, visits of 'kinfolks,' or the 'preachers' and the traveling doctors. Fat young lambs are plenty in many settlements from March to October, and can be had at fifty cents each, but I could not learn that one was ever eaten.

"A large majority of the adult population use tobacco in some shape—the men by chewing or smoking—the women by smoking or dipping snuff. They never have dyspepsia, nor do they ever get

fleshy, after they pass out of childhood, though nearly all the children are rudy in appearance, and well rounded with fat.

"One physical type prevails among the people in middle life, and carries along into old age with but little change, and old age is common there. Nearly every house has its old man or old woman, or both. Everybody, father and mother, and frequently grandfather and grandmother, are still on hand, looking as brisk and moving about as lively as the newer generations. After they pass their first forty years, they never seem to grow any older for the next twenty or thirty, and the grandfathers and grandmothers can scarcely be selected by comparison from their own children and grandchildren. The men are taller than the average, and the women, relatively, taller than the men. They are all thin featured, bright eyed, long haired, sharp-looking people, with every appearance of strength and power of endurance."

"I have learned by careful inquiry that very few of the people of the ridge have ever had the diseases of childhood. Scarlet fever I could hear of in but two places, and I suppose that not one person in fifty has had it. Whooping cough and measles have occurred but rarely, and the large majority have not yet experienced the realities of either. Very few people there have ever been vaccinated, nor has small-pox ever prevailed. Typhoid, typhus and intermittent fevers are unknown. In the great rage of typhoid fever which took place ten or twelve years ago in the Tennessee and Sequatchie valleys, not a single case occurred on the mountains, as I have been informed by physicians who were engaged in practice in the neighborhood at the time. Diphtheria has never found a victim there, so of croup. Nobody has nasal catarrh, and a cough or a cold is exceedingly rare."

"It seems to me this country has merits. It is located in the latitude of mild climate, not so far south as to be scorched by the hot summer sun, or visited by the great life destroying epidemics; not so far north as to meet the severe and lengthened winters.

"Climate, we know, is a fixture, it has a government, it has rules; the weather may change, but climate does not, it is a permanent, out-door affair, and what is true of to-day, was true centuries ago, and will be true forever—in the measure of any practical scope, at least. The people of the world are beginning to know that the greatest destroyer of human life has its remedy in climate.

"Mr. Lombard, in his famous exhibit in relation to the prevalence of consumption among the people of different occupations, circumstances of life and place of dwelling, gives the lowest num-

ber of deaths from this cause, to those who live in the open air. He found the people who lived most in the open air, as would be readily conjectured, in the mild latitudes, not in the countries of hot sands or cold snows."

A letter was addressed by the writer to Dr. Bowling in which the questions found below were proposed. They were copied and answered by the Doctor as follows:

Question 1 —Do you know of cases of consumption occurring or that have occurred among "the natives" born on the mountain?

Answer —I do not.

Question 2 —Does your experience or knowledge in the matter coincide with that of Dr. Wright's?

Answer. —It does. Rokitansky has given from observed facts the key to the answer to this enquiry. From his colossal material (the dissection of two thousand human bodies), he found that whatever in these bodies, when alive, had obstructed the free circulation of the blood, as hunchback, chickenbreast, tumors and the like, and consequently secured the predominance of its venosity, contributed to keep fluid in its plasma that which, escaping and being precipitated and congealed, is tubercle. Now, whoever has seen a mountaineer and has not read in his face this venosity of the blood beneath his chalky surface surely is defective in the power of observation. (See Simon on Tubercle. I have no books here.)

Question 3 —These people appear to have a pale, anæmic look. Is this so and if so, why?

Answer. —Yes. Mode of living and the absence of lime in the water they drink. The ruddiest people in the world are those who drink hard water—lime water. The Cockney, notwithstanding, he breathes smoke and drinks bulge water (having lime in it), is fresh and ruddy. Minute geologists believe, and you consequently will agree with them, that it is possible, if all the lime drunk in solution by Londoners since the town was founded could be collected, it would afford material sufficient to rebuild the city, were it shaken down to day. Beginning away up in Ohio, and sweeping along through the blue grass region of Kentucky and that of Central Tennessee, we may look for, with an assurance of finding, the finest race of men and the most beautiful women in the world, with an appalling amount of consumption. British medical writers tell us that their fathers sent patients threatened with consumption to the "fenny" counties of England to "catch the chills, as 'good' for that melody. Modern physicians laugh at the absurdity of this tradition, and many of them pretend through sheer contrariness to

believe chills bring on what the fathers thought they warded off, and Rokitansky would show that the fathers were right, that ague wonderfully contributed to the venosity of the blood.

In my young days the doctors all knew that tight lacing would undoubtedly kill all the women, so that the millennium, when at last it should get here, would find no one within the bounds of civilization either to interview, introduce, or even to welcome it. But I know they did not all die, for the girls I left behind me when I went to seek my fortune, many of them, are here yet, and as sound as a Spanish-milled dollar, and not a few, while nearer eighty than seventy, are able to-day to thread a waltz with a grace simply amazing. The corset contributed to secure venosity of the blood, and, consequently, exemption from consumption. Nor did they have the advantages of gynecology or abdominal surgery, and, it is melancholy to think, will at last die without ever having had the slightest suspicion of a womb.

Question 4—Are there any diseases to which these people are especially liable?

Answer—Yes. The remitto-typuous, not *plus*—so Drake named it in his monumental work. Drake made his observations at Ashville, in the good old political county of Buncombe, North Carolina, at about the same altitude of Monteville, but the truth of them applies to all parts of the plateau of which I have personal knowledge. It is often fatal. It not only remits in the beginning like typhoid on the plains, but throughout its course, and so could never be classed with the continued idiopathies, because of this leading pathological condition. It has nothing to do with malaria, as Drake recorded, for it exists where malaria does not. Drake called it, as the doctors did who treated it, "Mountain fever," and after him I have so called it. While, as it is undoubtedly a typhous or typhoid fever, and the only one that fairly and squarely remits diurnally from beginning to end, Drake's nomenclatural thought, for book purposes, was a happy one. But the attempt to make Drake father the nomenclatural monstrosity of typho-malarial in consequence, is a pitiable absurdity. This mountain fever is common to patches of the plateau covered by evergreens. I have not myself seen or heard of it south of the Fiery Gizzard.

I am glad, dear Doctor, that you have undertaken this paper. It is eight years now since the lamented Wight drew public attention to this weird land of promise, and though his paper has been republished in a medical periodical of our capital, and often referred to approvingly by myself, it has not received the attention it merits, nor achieved the good he must have hoped from it.

I have no doubt that very young people, the offspring of tuberculous parents, might secure exemption from this ruthless enemy of the most beautiful and gifted of our race, by a long residence on the plateau; nay, I am sure I have seen incipient consumption rolled back and overcome by its climate.

In the bonds of the brotherhood, I am, dear Doctor, very truly
your friend and obedient servant,

W. K. BOWLING.

THE MEDICAL TOPOGRAPHY OF THE VALLEY OF EAST TENNESSEE.

BY S. B. BOYD, M. D., OF KNOXVILLE.

KNOXVILLE, TENN., August 23, 1883.

T. A. ATCHISON, M. D., *President State Board of Health,
Nashville, Tennessee:*

DEAR SIR:—It is with pleasure, in the midst of many engagements, the duty prescribed by you is taken up. The questions you have propounded will be answered in the order you have arranged them.

“What are the prevailing diseases in your section of the State?”

Catarrhal troubles are most common; the cause is probably wisely ascribed to the sudden changes in temperature, which are frequent here during the winter months, while there is commonly very little real cold weather, yet the changes from a lower to a higher temperature are very often exceedingly sudden. The occurrences of such changes are marked by many people complaining of “colds,” some of pneumonia, pleurisy and rheumatism.

The mortality reports of the city of Knoxville show about one-eighth of the deaths to have been occasioned by consumption. Last year there were forty-seven deaths from consumption out of three hundred and sixty-five deaths from all causes. In the larger proportion the deaths are of persons who had come from other climates to this section of the State, seeking restoration to health. Malarious diseases prevail to some extent in East Tennessee, especially in low or newly cleared grounds. Typhoid fever has not prevailed notably in this section. However,

during the last three or four years it has claimed the attention of physicians in every county east of Chattanooga.

It is said that in 1835 intermittent fever of a malignant type became epidemic and was very severe. For several years afterwards it prevailed all over East Tennessee, especially in the region where is now situated the city of Chattanooga, and in this city. In the two last named places the disease was so severe that it literally decimated them. The fatality among the adults was enormous. So scourged was this place that as yet it is dated back to as an era in the history of the place.

In 1854 epidemic cholera prevailed in and about Maynardville, Loudon and Knoxville. In 1873 the same disease was rife in Greeneville and Jonesboro, in upper East Tennessee, and in Chattanooga in lower East Tennessee, and a few cases in Knoxville.

In the past twenty-five years diphtheria has scourged some neighborhoods. While scarlet fever has not been malignant, a few localities have suffered severely from it. There has also been some cerebro-spinal meningitis, and during the last two years small-pox has appeared in Chattanooga, Knoxville, Mosley Creek, Morristown and Rogersville.

"What is the influence of season on types of diseases?"

Where there is a high barometer, a moist atmosphere and heat, all catarrhal troubles are aggravated. In the late spring and early autumn months intermittent, remittent and typhoid fevers prevail more or less, together with rheumatism and pneumonia. In 1834-5 the intermittent fever mentioned above prevailed to such an extent as to provoke a spirit of enquiry for the cause of this type of disease, and led to consideration of the topographical features of the town, that probably until this time had received but little attention. For some months the town had been almost surrounded by water, and stagnant and muddy collections in larger and smaller basins on the hills through-

out the incorporated area. At this time the town of Knoxville was divided on the east by First creek; bounded on the west by Second creek; on the north by the Flag pond; on the south by the Holston river, with quite a number of ponds in the city itself. On First creek were four or five mill-dams, from one to three hundred yards apart. Some of these were quite large. Along the west side of this creek there were three or four tan-yards, with a large number of vats. On the north side of the town was Flag pond, so called from the large quantity of flags growing in the water. This pond overflowed during the rainy season into First creek on the east. It was probably four hundred yards long by about one hundred yards wide. It contained quite a number of fish, and was used by the cattle and hogs to feed and wallow in. On the west side of the town was Second creek, a slow-running stream, that had two or three mill-dams on it, and also one or two tan-yards on its banks. On the south was the Holston river. These may be, to a casual reader, unnecessary details, but to you, studying circumstances, there is none in the topography of Knoxville at that time. Of course, your correspondent did not then breathe the pure air of his mountain home, and has obtained his knowledge of difference between then and now from reliable source. However, the first calamity of our city is to be ascribed to the then condition of Knoxville. There were no instruments in the community to measure temperature, dryness and moisture of the atmosphere, yet observers noticed as a fact that summers had been successively warmer, and the creeks and rivers much lower. These facts were canvassed every year; each year fever was more prevalent, and became more malignant until, in 1838, the disease was so intense as to cause the then practitioners of the town to say, if this disease was at Mobile, Savannah or Charleston, it would be called yellow fever. The symptoms that were peculiar were coffee-ground ejections, the patients turned yellow to a marked

degree, apparent recovery, and death from hemorrhage. To-day East Tennessee, from Cleveland to Bristol, furnishes all natural factors conducive to healthfulness.

The following table will give an idea of the influence of season on types of disease:

	1875	1876	1877	1880	1881	1882
Zymotic Diseases.....	59	34	34	44	62	117
Constitutional diseases.....	31	46	47	32	50	46
Local diseases.....	74	48	54	47	61	91
Developmental diseases.....	18	8	8	12	24	23
Violence.....	8	7	5	8	8	15
Total number of deaths.....	229	168	185	145	274	365
Mean monthly humidity.....	71.7	70	68	70.1	70.4	74.4
Total amount of rainfall ..	73.87	41.19	54.35	52.54	45.67	66.36

The above table is taken from the reports of the Secretary of the Board of Health of Knoxville.

"What is the general topography of your section in relation to streams, forests, mountain ranges, character of soil and productiveness?"

East Tennessee is in a natural basin between two nearly parallel ranges of mountains. It is abruptly rolling. The streams flow from northeast to southwest, namely: Holston, French Broad, Clinch, and their tributaries. About equal parts of the section are cultivated and in forests; the lower and more level lands are generally cleared, while the rougher and more elevated are in woods. The Alleghenies on the east and south, and the Cumberland range on the north and west, enclose the section in the described basin. The ridges which flute the valley of East Tennessee from Virginia to Georgia, send out at many places heavy spurs which almost intersect the intervening valleys. The heaviest of these spurs run out from the east a short distance below Knoxville, and push the waters of the Tennessee river westward through a deep bend. At the extremity of these the Tennessee receives the Clinch river, which has been pushed eastward by similar spurs running out from the Cumberland mountains. These converging ridges ex-

ercise a very important influence on the climate of all the upper part of the valleys of East Tennessee, by cutting off and breaking the force of the prevalent winds from the south and southwest as a consequence of this peculiar topography: while the anemometer is always in motion, no destructive storm has ever visited East Tennessee. The geological formation of Knox county has given name to a series of rocks that is repeated many times across the valley of East Tennessee. According to Dr. Safford this Knox group consists of three subdivisions: Sandstone, Shale and Dolomite. The sandstone forms sharp, roof-like or notched ridges. The shale forms low valleys, while the dolomite forms broad, rounded-top ridges. The city of Knoxville is located on one of the dolomite ridges. The Knoxville ridge, extending approximately parallel with the river, is intersected by First and Second creeks, while longitudinally the ridge has been cut by displacement and erosion into two subordinate ridges. As a result of these intersections and displacements, the surface on which the city stands was once much more broken and irregular than it now appears. Quite a number of ponds existed where now are dwelling-houses and graded streets. These ponds were filled up, and a large number of dwellings in the city stand on made ground. With the three primitive kinds of soil, Sandstone, Shale and Dolomite, mixing constantly, we will have quite a variety of soils; and variety of soils gives us variety in our productions. Some of our valleys are exceedingly fertile. The productions consist of wheat, corn, oats, rye, millet, grass, clover, tobacco, potatoes, vegetables of all kinds and all the different kinds of small fruits, while our minerals are all that are known; principally iron, coal, lead, zinc and silver. Stock of all kinds, cattle, horses, mules, sheep, goats, etc., are raised. Dairy products and poultry are shipped extensively to other States.

"What is the character of your potable waters—whether hard or soft, and whether supplied by springs, wells or cisterns?"

Our rocks, being nearly all hard limestone, with some magnesium, in general the waters here are hard waters. Water mostly comes from springs, except in the cities; there it is supplied generally by cisterns. Yet in Knoxville, along the banks of First and Second creeks, there are about twenty-eight springs which supply drinking water for a large number of families. In the early times of the town, when the ponds caught the surface drainings largely, and the streets acted as sewers, it is possible that the waters of these springs were comparatively innocuous, but with the increase of population, filling up of the ponds, and grading of the streets, such is no longer the case. The waters of these springs are all strongly impregnated with lime, considerable magnesia and traces of iron.

OZONE,

AND ITS

RELATIONS TO THE PUBLIC HEALTH.

BY

J. D. PLUNKET, M. D.,

OF NASHVILLE, TENNESSEE.

MEMBER OF THE STATE BOARD OF HEALTH, AND ITS
COMMITTEE ON OZONE.

OZONE, AND ITS RELATIONS TO THE PUBLIC HEALTH.

Ozone is a peculiar variety of oxygen, distinguished from ordinary oxygen by its greater weight, its peculiar and somewhat chlorous smell, its intensely active oxidizing powers and the ease with which it passes into common oxygen. Ozone, as it appears in the atmosphere, is in variable amount, differs in degree according to height, locality, temperature, electricity, etc. Mr. A. Beechan says, "it is more abundant on the sea coast than inland, in the west than in the east of Great Britain, in elevated than in low situations, with southwest than with northeast winds, in the country than in towns, and on the windward than on the leeward sides of towns." And Moffat states it is found in greater proportions when the mean daily temperature and the dew-point temperature are above the mean and the readings of the barometer are decreasing. From the records of the Scottish Meteorological Society, we find it "most abundant from February to June, when the average amount is 6, and least from July to January, when the average is 5.7. The maximum, 6.2, is reached in May, and the minimum, 5.3, in November." Commenting upon this, remark is made that "thus the maximum period occurs when evaporation is greatest, and the minimum when the condensation of aqueous vapor is greatest, a result in accordance with the conclusions arrived at by Dr. Berigny and M. Houzeau. It thus also appears that it is most abundant where electricity is produced, and least so, or entirely wanting, where electricity is in least quantity, and where there is much decaying vegetable and animal matter." Ebermeyer says it is found most abun-

dant in the air of open fields and in places of great atmospheric moisture. In the forests more is found in the upper strata of air, among the branches, than near the ground, owing, doubtless, to the absorption which occurs in the process of decomposition. According to Dr. Cornelius Fox the sources of ozone are—"The oxidation of metals, the decomposition of rocks, the germination of seeds, the growth of plants; the collision between air-currents of different degrees of humidity, proceeding from opposite quarters with one another, or with the earth; the evaporation which is continually proceeding from saline fluids, such as oceans, seas and lakes; the dashing and splashing, the smashing and crashing of the restless waves on the rocky coast—are all concerned in the simultaneous development of electricity and ozone." Kedzie says that ozone is to be "found where water by any means is 'pulverized,' *e. g.*, in the neighborhood of waterfalls," and in commenting upon this fact remarks that "this may possibly be explained by the fact, now well established, that ozone is soluble to a small extent in water ($\frac{1}{2}$ of 1 per cent.), and where water is thus converted into spray this dissolved ozone may be liberated." And he further adds: "It may at last be found that the delight which civilized man has ever taken in the thundering of the ocean surf, the roar of the waterfall, or the silvery tinkling of the fountain, has a deeper significance than the gratification of an esthetic taste, and that our sense of the beautiful is thus happily correlated with an important condition of bodily health."

The chemist has never as yet been able to isolate ozone. In its sensible properties it is a colorless gas, having a peculiar odor of phosphorus like that perceived during the passage of an electric spark, which caused Van Marum, who was the first to notice it in 1785, to describe this odor as "the smell of electricity,"—he believing electricity to be a material substance. This odor is so powerful that it is

said that one part in a million of air can be distinguished by the sense of smell. It is one of the most powerful oxidizing agents known, oxidizing silver, mercury, iodine and many other substances immediately. It corrodes cork, paper, animal membranes, caoutchouc, and other organic substances.

It is nature's great disinfectant and deodorizer, uniting most readily with the gases which arise from decaying vegetable and animal matter, and by depriving them of their noxious qualities, serves as a great purifier of the air. Its importance arises from its intense activity rather than its amount, for the maximum quantity of ozone in the air, Howzean informs us, never exceeds $\frac{1}{700000}$ of its bulk, and often is entirely wanting.

What relation this intensely active and exceedingly interesting agent sustains to animal life, is the aspect of the subject which must interest us most, and when the additional fact is stated that the influence which ozone exerts upon health and disease is still an undetermined problem, it cannot fail to prove an active stimulus to our efforts in aiding, so far as possible, by the accumulation of data and otherwise, the elucidation of a question which apparently promises so much. Ozone, in its effect upon the mucous membranes, especially of the respiratory passages, is that of a powerful irritant, when breathed in any concentrated form, which fact led to the suggestion of its possibly being in some way connected with, if not the immediate cause of, epidemics of influenza and catarrhs. Schœnbein observed at Berlin, during an epidemic of influenza, a considerable quantity of ozone in the atmosphere. Dr. Pietra-Santa has also shown that when influenza prevails the ozone-papers show lively reactions. Prof. Charles N. Hewitt, of Minnesota, in a paper read before the American Medical Association in 1871, says: "The peculiar atmospheric condition which is the cause of our epidemic influenza is now attracting deserved attention,

and it is hoped that the recent offer of a prize by the State Medical Society may result in investigations of practical value. This much is known: that when influenza is *markedly* epidemic, zymotic diseases diminish in severity, become less frequent, and disappear. Though as yet no sufficient tests have been used, the majority reporting (judging from its action on 'civic miasm,' which seems that of an oxidizing agent, and from reports of its study elsewhere), believe it to be ozone." A residence among the balsamic odors of the pine has long been esteemed of benefit to the pulmonary invalid, which practical fact finds ready scientific explanation in the statement made by Dr. Schreiber, of Vienna, that "the turpentine exhaled from pine forests possesses, to a greater degree than all other bodies, the property of converting the oxygen of the air into ozone." Dr. C. Dennison, of Colorado, says "that the excess of ozone noted during the spring months on the plains came proportionately late in the season the higher up the mountains the observations were made." This statement, no doubt, will be fully confirmed by the recorded observations of ozone now being made in Tennessee, regarding the valleys as compared with the plateau of the Cumberland mountains of our State, which may serve as a profitable indication to the invalid, the delicate and overworked, of the special advantages of going into yet higher regions during the progress of the summer season, where, consonantly with the increase of ozone, can be enjoyed the cooler temperature and purer atmosphere which elevation always insures.

Beside diseases of the nose, throat and pulmonary structures, other maladies have been suggested as in some measure due either to the presence or absence of ozone in the atmosphere, or aggravated or mitigated by it: for instance, Billard, Wolf, Boeckel and Strambes agree that the cholera in Strasbourg, Berlin and Milan coincided with the absence of ozone, and that it reappeared on the decline of the dis-

ease—an important observation to confirm, should cholera visit Tennessee during the approaching summer, as is now apprehended by many of the best informed it may.

Hon. Frank H. Mason, United States Consul at Marseilles, France, in an interesting report to the Department at Washington, D. C., bearing date of September 30, 1884, upon the recent epidemic of cholera which occurred there, under the sub-heading, "Some Teachings of the Epidemic," makes the following statement: "It is now a well established fact that the presence or absence of ozone in the atmosphere has a marked effect upon choleraic conditions.

"It was noted early in the present epidemic that there was a marked deficiency of ozone in the atmosphere of Marseilles, and means were adopted to supply this deficiency at the Pharo Hospital, in this city, by the usual means of an electrical apparatus.

"The process of negatively electrifying the oxygen of the air on a sufficiently large scale for practical sanitary purposes is always difficult, but sufficient was done and observed in this direction to fully establish the following facts:

"1. That the whole period of the cholera epidemic has been marked by a notable deficiency of ozone in the atmosphere of Marseilles.

"2. That in the wards of the Pharo Hospital, where artificial ozone was provided, the death-rate was considerably diminished.

"3. That the days of greatest fatality in respect to the number of both new cases and deaths were those during which the proportion of natural ozone in the air was smallest.

"4. That the setting in of a southwest wind, which, although warm, brought an increase of ozone to the local atmosphere, was, in every instance, followed by an immediate and marked decrease in the death rate and the number of new cases reported."

Cholera has appeared twice in epidemic form at Fort Riley, in Kansas, and Dr. W. A. Hammond is quoted as authority for saying that while the epidemic continued at that post, the air was dry and contained no ozone, the occurrence of a very severe thunder storm put an end to the epidemics in both instances, and ozone at once reappeared in the atmosphere.

The wonderful oxidizing power of ozone has caused its artificial production to be suggested for ordinary disinfecting purposes. On November 21, 1878, I had the honor of reading a paper before the American Public Health Association on "The Disinfection of Sewers by Ozone," suggesting a simple and cheap device for its manufacture and application in "the disinfection of sewers and other sources of mephitic gases." In this connection, Dr. Fox in a late work suggests that "ozone should be diffused through fever-wards sick-rooms, the crowded localities of the poor. Its employment is especially demanded in our hospitals, situated, as they mostly are, in densely populated districts, where the atmosphere is nearly always polluted by re-breathed air, decomposing substances and their products, and where no ventilation can be fully effective." Continuing, he further says: "If practicable, it would be highly advantageous to direct streams of air, artificially ozonized, into the fever and cholera nests of our towns." Ozone may be easily disseminated through public buildings, theaters and other confined atmospheres, where numbers of people are accustomed to assemble, in order to maintain the purity of the air.

Curious and interesting as is the subject of the presence and effects of ozone in its manifold applications, the obscurity which envelops still the whole subject requires yet many thousands of accurate observations before definite deductions can be profitably attempted. Appreciating fully this fact, so far as ozone bears relations to human health and disease, the public health men of Tennessee have been long anxious to see inaugurated some plan by

which ozone observations could be secured regularly by competent observers in different places throughout the State. With this view, the Nashville Board of Health acted formally and early, as will be seen from the following extract taken from the report of J. Berrien Lindsley, M. D., Health Officer, as published in the Third Report of the Nashville Board of Health, 1878:

"At a meeting of the Board, held June 20, 1876, it was, on motion of Dr. J. D. Plunket,

Resolved, That the meteorological observations made by the United States Signal Service here and at other points are of the greatest value to the physician, as well as to the agriculturist and merchant.

Resolved, Also, that the value of the observations here, in a sanitary point of view, will be greatly increased by proper registrations of the variations of ozone in the atmosphere.

Resolved That the Director of the United States Signal Service be petitioned to supply the Nashville station with the necessary means for such registration.

"Adopted and the Health Officer was directed to transmit a copy of them to the Department at Washington, D. C. In response, the following was received:

WAR DEPARTMENT OFFICE OF THE CHIEF SIGNAL OFFICER,
DIVISION OF TELEGRAMS AND REPORTS FOR THE BENEFIT
OF COMMERCE AND AGRICULTURE,

WASHINGTON, D. C., July 10 1876.

"J. BERRIEN LINDSLEY, M. D., *Health Officer, Nashville Tenn.* :

SIR — By direction of the Chief Signal Officer of the Army I have the honor to acknowledge and answer your communication of the 6th inst., communicating resolutions of the Board of Health of Nashville relative to special observations for the benefit of the public health.

This has frequently been considered by this office. What it does in the domain of climatology is in addition to its regularly defined duties, and it is quite certain that to enter upon the kind of observations to which you refer would require a very liberal construction of the laws and orders relating to this service. It would, however, afford this office satisfaction to enter upon the additional field of usefulness, if authorized and provided with facilities, but every new observation would require more money and more force, whereas it seems probable that Congress will diminish both the money and

force heretofore allowed, thus rendering necessary an abandonment of work now performed. The proper course for the Board of Health would be to address to Congress resolutions showing the importance of increasing the appropriations and force of the Signal Service, and send them to the proper Senators and Representatives, also one copy to this office, that it may be referred to. The present resolutions, however gratifying as showing the appreciation of the work of the service, are not practically useful for the immediate object the Board has in view, as the facilities must be given by Congress before they can be used to comply with the request of the Board.

Respectfully yours,

GARRICK MALLEY,

Captain and Brevet Lieut. U. S. A., Acting Signal Officer and Assistant.

“Acting upon the above, at a meeting of the Board held July 20, inst., it was unanimously resolved, that the following memorial be sent to the Senators and Representatives in Congress from Tennessee:

“The Board of Health of the City of Nashville do hereby respectfully memorialize the Senators and Representatives of the State of Tennessee in Congress assembled, as follows:

“WHEREAS, By an Act of Congress, approved February 9, 1870, it was made the duty of the War Department to make, register and publish, by telegraph and otherwise, an extended series of meteorological observations; and,

“WHEREAS, The United States occupy climates and areas peculiarly fitted for solving the great problems connected with epidemics and public health, as well as intricate questions connected with the physical sciences which Franklin and Morse did so much to develop; and,

“WHEREAS, This invaluable series of observations is utterly beyond State and individual effort, and yet is alike beneficial to all the individuals and States composing the Union:

“Therefore, we do earnestly hope that your influence and vote will be so used as to increase and extend, and not cripple the singularly beneficent and peaceful workings of this small portion of the national army.

What Congress did regarding this Bureau was, in a word, to let it alone—no increased facilities were allowed, it, and up to now, as an organization, it has attempted no ozone observations that we are aware of.

Dr. Albert C. Ford, United States Signal Service ob-

server stationed at Nashville, upon the suggestion of the Chairman of the Committee on Climatology of the Local Board of Health, began the taking of ozone observations in the spring of 1877, but soon after, in consequence of failing health, abandoned it. These, it is believed, were the first ozone observations ever made in Tennessee. No further effort was made, so far as we are informed, to ascertain the amount of ozone in the atmosphere of our State until the fall of 1884, when a special Committee on Ozone was raised in the State Board of Health, and upon the request of its Chairman, L. N. Jesunofsky, United States Signal Service observer, stationed at Nashville, began on October 1, 1884, to make regularly two daily observations on ozone. With the view of obtaining similar observations throughout the State, the following correspondence indicates what steps were taken and progress made :

NASHVILLE, TENN., September 29, 1884.

HON. A. J. McWHIRTER, *Commissioner of Agriculture, Statistics and Mines, and Director of State Weather Service, Nashville :*

DEAR SIR—Having watched with much interest and pleasure the practical workings of the State Weather Service, as organized by you throughout Tennessee, I now, in behalf of the State Board of Health, request that you take one step further in advance, and add one other column to your present form for reports, in which shall be recorded the tri-daily observations of ozone, as may appear at the different stations in the State

Ozone, as you know, is Nature's great deodorizing and purifying principle that oxidizes the emanations from decomposing animal and vegetable substances, with which the air is unceasingly being contaminated, thus rendering them innocuous, and fitting the atmosphere for the further sustenance of animal life.

An agent, then, of such amazing power, and present in such variable amount in the medium which envelops us every moment of our lives, cannot, it would seem, be other than most significant in its influence upon public health.

It is in this relation that the information sought is most desired, for, as yet, we have not a sufficient amount of carefully observed fact to serve as a basis for any generalization of the special relations of ozone to disease.

To the end of supplying this great want, by having the facts in regard to ozone in Tennessee gathered up and collated, and thereby serve indirectly as an inspiration to other States and communities to do likewise, this communication finds its apology; for then, by a careful and conscientious comparison of these facts, with the regional and seasonal history of disease, we may be enabled to arrive at conclusions which shall be more than unfounded assertion or imaginative hypotheses.

Should you be pleased to co-operate in the manner suggested, this Board will furnish to all observers whom you may designate, the means by which the observations can be made, accompanied by such instructions as may be necessary for the easy comprehension of any.

I am, sir, very respectfully and truly yours,

J. D. PLUNKET, M. D.,

Chairman of Committee on Ozone of State Board of Health.

NASHVILLE, TENN., October 6, 1884.

DR. J. D. PLUNKET, *Chairman of Committee on Ozone of State Board of Health, Nashville:*

DEAR SIR—Your communication of September 29th, asking the co-operation of the Weather Service Department of this Bureau, in getting the observations of ozone throughout the State, has been received.

This Bureau will, at all times, cheerfully and heartily co-operate with the State Board of Health in anything pertaining to the welfare of our State and the advancement of the physical or material interests of its citizens.

Your suggestions regarding the mode of taking the observations will be presented to our voluntary observers, and their assistance invoked in the work.

Very respectfully yours,

A. J. MCWHIRTER,

Commissioner, and Director State Weather Service.

In due time notice was received from the Director of the State Weather Service that each observer of his department entered heartily into the request, and upon receipt of material and instructions, they would cheerfully begin the work. At once there was prepared and forwarded, through the office of the Director of the State Weather Service, to each observer, a copy of the following :

INSTRUCTIONS FOR
MAKING AND RECORDING OZONE OBSERVATIONS,

Issued to the volunteer observers of the Tennessee Weather Service

BY THE STATE BOARD OF HEALTH.

1st. For the present, only two observations in each twenty-four hours are called for, viz., a "Day Observation," to be taken from 7 A. M. to 2 P. M., and a "Night Observation," to be taken from 9 P. M. to 7 next morning, and recorded in the line of report for the day on which the test paper was put out.

2d The observations are taken by means of Schoenbein's test-paper, and the result determined by comparing the test paper employed with the ozone-scale, which, in each instance, must be that furnished by the State Board of Health.

3d Each observer is requested to give timely notice of the exhaustion of his supply of test-paper, that no break in the observations may occur, and also to preserve the stock of test-paper in a closed bottle or jar, in a dry and dark closet, because sunlight will form ozone and color the paper so as to destroy its value as a test. Colorless test-paper only must be used in measuring ozone, and it should be exposed where it will not be subject to action of sulphurous acid gas, or very near where coal is burned. Even the fumes of burning sulphur from a single match, held near the test-paper may bleach it after having been colored by exposure.

4th In making an observation, take a single strip of the test-paper furnished you, dip one-third of the paper in pure water, and pin it up in a place screened from direct sunlight, but freely exposed to the air, and diffuse daylight. An ordinary spring clothes-pin, properly fastened in position, is a convenient article to hold the test-paper during the exposure. After exposure for the time stated above, dip the paper in clear water, immediately compare it with the ozone scale, and enter in the proper column of report the figure on that portion of the scale which most nearly corresponds in color with the test-paper used. If there is no discoloration of the test-paper, no ozone is present, and a cipher should be entered on the record for that observation.

5th In deciding the amount of ozone for any observation by comparison of the test-paper with the ozone scale, the *prevailing* color of the test-paper should be taken, and not the exceptional spots or streaks. The observation should be made and recorded from the side of the test-paper most darkly colored, whether front or back.

Also a copy of the lithographed "ozone scale" which is to be found upon the following page, and a sufficiency of test-paper, prepared after the formula of Schœnbein, to last each observer for four months. Observations were begun simultaneously upon December 1, 1884, and at this time there are twenty-eight observers actively engaged in making ozone observations in Tennessee, whose names and post-office addresses are as follows :

Geo. W. Robinette, Quarter, Claiborne county.

Jno. A. Cody,* Knoxville, Knox county.

Foster Clarke, Maryville, Blount county.

David Hart, Careyville, Campbell county.

S. E. Franklin, Sunbright, Morgan county.

J. T. Cowden, Grief, Bradley county.

B. L. Goulding,* Chattanooga, Hamilton county.

T. L. Denny, Cookeville, Putnam county.

W. K. Patterson, Jr., McMinnville, Warren county.

S. P. Fergusson, Riddleton, Smith county.

Chas. F. Vanderford, Florence Station, Rutherford county.

L. N. Jesunofsky,* Nashville, Davidson county.

Prof. J. M. Safford, Vand. Univ., Nashville, Davidson county.

J. A. Laughlin, Hurricane Switch, Maury county.

Rev. C. F. Williams, Ashwood, Maury county.

Samuel Stewart, Clarksville, Montgomery county.

W. J. Inman, Kingston Springs, Cheatham county.

Frank Winship, Pulaski, Giles county.

Sam'l Donaldson, Dickson, Dickson county.

Dr. Cicero Buchanan, Waynesboro, Wayne county.

H. R. Hinkle, Savannah, Hardin county.

Dr. M. D. L. Jordan, Milan, Gibson county.

A. S. Currey, Trenton, Gibson county.

E. P. McNeal, Bolivar, Hardeman county.

Louis Hughes, Dyersburg, Dyer county.

D. B. Cummins, Somerville, Fayette county.

Dr. T. W. Roane, Covington, Tipton county.

D. T. Flannery,* Memphis, Shelby county.

A number of other names are expected to be added to this list soon.

The observers will make their reports to the Director of

* U. S. Signal Officers.

the State Weather Service, and he will embrace the same in tabular form in the monthly printed report issued from that office. Thus will be accumulated and preserved the data regarding ozone in Tennessee, which will, at the proper time, be analyzed, arranged and reasoned upon by your Committee on Climatology with the view of obtaining, if possible, practical deductions, especially so far as ozone may appear to be related to questions affecting the public health.

The Committee on Ozone had reprinted and distributed among the observers of the State Weather Service, and others interested in the subject, the two following instructive and valuable papers, the one by Dr. Mulvany, and the other by Dr. Nicholson.

OZONE IN NATURE.*

ITS RELATIONS, SOURCES AND INFLUENCES.

A Paper read before the British Meteorological Society, June 16, 1880.

BY J. MULVANY, M. D. B. N. (ENGLAND.)

Ozone, since its discovery by Schœnbein, has been to the scientific world the subject of incessant study and observation; by medical men especially it has been regarded with the deepest interest, for experiment has shown artificially prepared ozone to be endowed with great energy of action, and to be adapted by its physical attributes and chemical affinities to play a very important part in the chemico-vital processes of the system, and in the purification of the atmosphere. And as it was seen to stimulate the respiratory and circulatory organs, and when inhaled in excess, to irritate the mucous tract over which it passed, and moreover to be readily absorbed by the blood, in which it liberates

* Michigan State Board of Health, Report 1880, page 277.

oxygen, checks incipient putrefaction, and replaces it by restored coagulability, and to so elevate in the scale of oxidation the chemical formula of the products of retrograde metamorphosis, as to render them more facile of elimination, atmospheric ozone came to have ascribed to it the most varied offices and influences, prophylactic, sanitary, morbogenetic, etc. But the part it plays in the economy, and how far it ministers to health or promotes disease, should be determined by observation alone. And as it is rarely met with dissociated from meteoric and other subtle agencies which often are sufficiently powerful to modify the extent of its appreciability or to disturb the functional harmony of the system, a careful elimination of the effects of these one by one is obviously necessary for the differentiation of its action (*per se*). For the acquisition of such an accumulation of data as this requires, the naval medical officer has peculiar facilities. In the observations from which the present report is epitomized are embraced the varied conditions of climate met with between the Doggerbank on the north, Madagascar and the Falkland Islands on the south, and from 96° long. west to the same number of degrees east, and the modifications which ozone underwent from cold, heat, humidity, pressure, geographical position, configuration, soil, contiguity to a desert, a jungle, or a marsh, etc.; also, the corresponding sanitary conditions on shore and afloat. As the investigation of its effects may be advantageously preluded by that of its relations, I will proceed to the consideration of these latter, commencing with temperature.

TEMPERATURE.—From experiments in the laboratory, when a high temperature is seen to break up the peculiar grouping of the molecules of oxygen which constitutes ozone, and restores them to their bulky and less active state, it has been supposed that a much heated condition of the atmosphere is inimical to ozonization, and hence probably it has come to be axiomatically formulated,

that the curve of the ozone is in the inverse ratio to that of the temperature. Strictly speaking, this rule holds good where a high temperature with a minimum humidity obtains; but this is too seldom witnessed in nature to constitute a rule; so narrow is its applicability that it might rather be classed as an exception. For as the atmosphere becomes rarified by heat its capacity for taking up and holding water in a state of vapor is correspondingly exalted, and consequently a high temperature, except under peculiarities of locality to be hereafter alluded to, is always associated with a high humidity, and humidity is favorable to ozone. But, regarding temperature alone, it will be seen from the following table that the temperature of the atmosphere as met with in nature bears no relation to its ozonic condition:

DATE	PLACE.	TEMPERATURE IN SHADE.			Ozone. Mean.
		Minimum.	Maximum.	Medium.	
January, 1867	Lake Erie.....	14 below zero.	32°	9	2.5
January, 1868	" ".....	16	27	5.5	2.5
Apr. 1, 1868	" ".....	31 above	52	41.5	3.0
March, 1871	Harlar Hosp., Heath	26	61	41.5	2.0
August, 1872	Mozambique.....	70	90	80	1.3
May, 1872	East Africa.....	78	88	83	9.5
November, 1873	Tricomalee, Ceylon	75	86	80.5	10.0
September, 1871	Persian Gulf.....	83	104	90	7.6

HUMIDITY.—When a high humidity accompanies a high temperature, the rule, with many exceptions, however, is that ozone is also high, and with a similar temperature and a low humidity ozone is scanty. This is illustrated by the following figures:

DATE.	PLACE.	TEMPERATURE.		HUMIDITY.		Ozone.
		Min- imum.	Max imum	Per Cent. of Satura- tion.	Vapor Tension.	
October, 1865	Santa Maria	78	85	77	0.723 in. Mercury	5
August, 1871	Persian Gulf	87	114	79	1.223	6
July 1873	Zanzibar.....	70	84	78	0.894	6
May 1873.	Muscat, Arabia	94	99	28	0.514	a trace
September, 1872	Madagascar	72	97	51	0.570	2
January, 1877	Falkland Isl's	33	61	74	.....	10

Than this relation of ozone to heat and humidity, nothing is more calculated to impress us with the benignity and prescience of the design which causes an augmentation of ozone, when for the maintenance of a pure atmosphere it is most required, that is, under the conditions of heat and humidity in which organic compounds are most unstable and putrefy with the greatest rapidity. The association of ozone with vapor in a high degree of tension, though not definite in its relation, is nevertheless so constant that whatever tends to augment the latter will have a similar effect on the former. This is well exemplified in the case of winds.

WINDS.—The hot, dry winds that sweep over the arid rocks of Beloochistan, or the thirsty sands of Arabia, rarely contain more than a mere trace of ozone when they arrive at the seaboard. In the Mozambique Channel, which the southeast trade winds reach after having their moisture wrung out of them by the high central plateau of Madagascar, ozone is very scanty indeed. At Trincomalee, during the southwest monsoons, which reach it after being filtered through the jungle, a great paucity of ozone is observed in the lower atmospheric strata. But on the contrary, wherever the breeze reaches after sweeping over a large tract of sea, ozone and humidity are usually abundant. Hence, it appears to be through the nature of the surface over which they blow that winds influence the ozonic condition rather than by their force or direction.

AREA.—The area over which winds pass, if homogeneous, tends greatly to augment or diminish ozone, water producing the former effect, land the latter, the difference between the west and east coasts of Mahe, in the Seychelles Islands, being one to two degrees less on the leeward side. In passing through the Bay of Bengal, January, 1874, with the northeast monsoon blowing, I got at the port of departure, Trincomalee, the maximum shade; at the Andaman Islands (Port Blair), it amounted to only 2; and at

Rangoon, or the *embouchure* of the Irrawaddy, it barely reached 1.

CLOUDS are favorable to ozone. In the Indian Ocean, where, during monsoon weather, heavy murky piled clouds are often met with, the atmosphere is as a rule strongly ozonized; whereas, when the sky has been bright, blue, and cloudless for a week, it usually averages 1.5 to 2.

ATMOSPHERIC PRESSURE, humidity apart, does not appear to exercise any influence whatever over the ozonic condition; but taking 29.90 for the intra and 30.00 for the extra tropical standard, the greatest abundance coincides with the readings below these.

RAIN sensibly augments the ozonic condition; if there have not been a trace of coloring for several days a single shower is often observed to effect an immediate coloration. I once observed this under circumstances entirely unique. On the passage to Seychelles, in June, 1873, there was an abundance of ozone from a few days' sail off the Arab coast to within a short distance of the Equator. I did not observe the faintest trace of it during the 18th, 19th and 20th, although the sky was cloudy, the air hot and humid, and the wind high and squally; but during the night of the 20th it rained heavily in showers, and the next morning the test-slip was colored to the utmost. As we had during the period of negation crossed the "Line," it struck me that the peculiarity of the negation might be owing to an antagonistic influence being exercised in the equatorial belt by the *horizontal magnetic force of the earth*, but subsequent experience showed this conjecture to be erroneous. It, however, led me to investigate the relative abundance of ozone in the north and south latitudes, but my data are not sufficiently copious to admit of deductions. During 250 days south of the Equator in the Eastern Hemisphere, the ozone averaged 3.5, and during 450 days north of it, 6.5. Since then I passed over two years south of the

Equator, in the Falkland Islands, and never found the ozone under 10.

SQUALLS.—A squall without rain produces a very slight degree of coloration, but the increase resulting from a rain-squall is decided. A thin steady mizzle of a whole day's duration will not show more color than a strong rain-squall of two hours. This led me to believe that the *phosphorescence* of the tropical seas might be a source of ozone, and that the difference between the thin mizzle and the smart shower might be owing to the greater momentum of the latter penetrating the sub-surface waters and agitating the myriads of noctiluca which have their habitat there, and thus cause them to light up their tiny lamps and thereby generate ozone; but I failed to corroborate this by experiment, and subsequently I found reason to believe that rain simply acts as a vehicle, and that the difference in effect between the mizzle and the smart shower consists in the latter coming from a greater height—but I will return to this presently.

ALTITUDE.—When, from any cause, the ozone of the lower atmospheric strata gets used up, that from the higher does not appear to diffuse readily into its place, and hence it occurred that I was often able to obtain a high degree of ozone at the masthead when the air on the upper deck gave hardly a trace. At Trincomalee, 1873, during the southwest monsoon, the greatest amount of ozone was always obtainable at the flag-staff, 175 feet high, next at the top of the mainmast of my ship, then on deck, and least in the village. The wind, before reaching the deck, got filtered through the jungle. The top of the mainmast reached a stratum only partially filtered, and the flag-staff towered above the tops of the tallest trees. The effects are seen in this tabular form:

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TIME OF EXPOSURE.	OZONE OBTAINED AT		
	The Flag-staff, 175 ft. high.	The Maintop, 120 ft high.	On upper deck.
From 9:30 A. M. to 9:30 P. M., October, 1873.....	9	7	2
From 9:30 P. M., 6th Oct., to 9:30 A. M., 7th Oct.....	5	5	2
	14	12	4

EVAPORATION would seem to be indicated by the close relation which exists between humidity and ozone as a source of this latter; but although it contributes towards its *genesis de longue main*, it is not by the act of evaporation that ozone is produced; for when evaporation is greatly impeded or checked by the elastic force the atmospheric vapor has acquired, the ozone may be abundant, and *vice versa*.

GENESIS OF OZONE.

But though not a direct factor, evaporation appears essential to its formation, for, dormant in the vast quantities of vapor which ascend from the surface of the tropical seas at or beyond 85° F., it throws into the upper strata prodigious quantities of force in the condition of latent heat, which, as it becomes liberated by rarefaction and radiation, swells out the lower strata and approximates them to the upper; while at the same time, if one may judge by the strong electricity which accompanies the precipitation of vapor without rain on a clear summer's evening, when a cloudless sky permits free radiation, the liberation of heat, the radiation and condensation in the upper regions similarly affect the liberation of electricity, and so augment the electric tension of the lower strata that the insulating medium (Quetelet) diminished in resisting power by the bulging upwards of the strata below it, is no longer able to keep the electricities apart, and in the act of uniting the para-

magnetic oxygen gets acted upon and condensed into ozone. If this supposition be correct, the action of rain, etc., is easily understood. Rain would simply act the part of a vehicle and bring us ozone from the upper regions, and the difference between a smart shower and a drizzle would be occasioned by the former coming from a greater height, as attested by the greater velocity and momentum it acquires in falling in virtue of the accelerating force of attraction. It is probably owing to the absence of this vehicle that no appreciable increase of ozone is occasioned by the noiseless flash-lightning so common in autumn and in the tropics. It cannot be doubted that flash-lightning is identical in nature with the terrific corruscations, which, accompanied by thunder and rain, render the formation of ozone appreciable by the Olfactories. But there is every reason to believe that the former occurs at a much higher altitude, at such a distance, in fact, that its accompanying sound cannot reach us. By the vehicular function of the rain drops the favorable influence which clouds (rain spherules in a state of flotation) exert, is easily understood.

OZONE—ITS RELATION TO DISEASE, AND ACTION ON THE SYSTEM.

MALIGNANT CHOLERA.—Scanty ozone, or its total absence for a period, was supposed by Steimer and others to be the *primum mobile* of malignant cholera, and Armand Isbert looked for its efficient cause in a similar condition of ozone combined with the exaltation of temperature, great humidity, and stagnation of the atmosphere. During the cholera epidemic which swept the East in 1871, and paid a visit to H. M. S. "Magpie," the ozonic condition presented no peculiarity either in point of paucity or abundance; and it is not a little remarkable that when the heat reached its maximum and brought in its train great humidity and arid stagnation, the cholera entirely ceased, but reappeared as soon as the great heats were over, and the morning and evening atmospheric circulation became again brisk. The

following table will show the leading features of the two cholera periods, and the intervening healthy interval in the Persian Gulf in 1871 :

First Cholera Period, July 1 to July 20.	Healthy Interval July 20 to Aug. 28.	Second Cholera Period, August 28 to October 1.
Wind, N Force, 2 to 6.	No Winds.....	Variable, 2 to 6.
Temperature, 75° to 93°	89° to 104°	80° to 94°. Under double awn'gs.
Vapor tension, 0.654 in.....	1.106 in.	1.015 in.
Saturation, 50	84	70.
Ozone, 4 to 9	2 to 6	2 to 6.

In both these periods it would be impossible to suppose that ozone was in any way connected with the origin or prevalence of the disease, and it is quite clear, and was recognized by every one on board, that its temporary cessation was occasioned by the intense heat.

CONSUMPTION has been ascribed by some to a deficiency, by others to the opposite extreme, of ozone. Amongst those who held the latter was its illustrious discoverer. The disease is met with under circumstances unfavorable to the presence of ozone, viz., where overcrowding occurs, and the ozone not only gets used up, but the atmosphere gets vitiated by exhalations from the skin and lungs, and it is rather to this latter pollution that the disease must be ascribed than to ozonic deficiency. In Nassua, N. Providence, the sanitarium of the West Indies, the disease commits the most fearful ravages amongst the negroes, who sleep in close, small, windowless huts, stretched out *ventre a terre*, but spares the whites, who sleep in large, well ventilated apartments. In Seychelles it is also met with amongst the blacks, who resemble their brethren of the West Indies in their domestic arrangements. Amongst the Sackalavas, Arabs, and negroes of Madagascar, where the ozone is hardly ever above 2 or 4, I never met a single case; but their houses are simply constructed of reeds, or if of mud, the gables do not reach to the roof, so that free ventilation always obtains. In the Indian Islands, where, during certain months, an excess of ozone is the rule, and in the Falkland Islands, where an excess is constant, con-

sumption is hardly ever met with—so that I do not believe ozone tends, either by excess or the opposite, to promote the disease. But a cure being once established, I believe an ozonized atmosphere to be more suitable than one where there is but little.

Sloughing ulcer is common in Mozambique, but so it also is in Seychelles, and there it was found to depend on the presence of a parasite intermediate in shape between the chigoe (jigger) and the cimex lectularious.

EXCESSS OF OZONE.

The diseases I have met with most frequently in association with excess of ozone are simple fevers, functional heart disorders, and dysentery, but I have never found reason to think it had any casual agency in their production.

INFLUENCE ON THE PROCREATIVE FUNCTIONS.

The only influence I have been able to obtain satisfactory indications of ozone exercising on the human system, is, that which it appears to exercise on the procreative functions; whether it exalts the vitality of the Graffian vesicle, stimulates the inherent developmental force of the seminal corpuscles, increases the activity of the generative organs in the male and female equally, I know not; but it certainly appears to increase the chances of fecundation, for I have found that births are few where ozone is scanty, and numerous where abundant. In a Sakalava or negro village, on the west coast of Madagascar, the most striking features are the scarcity of children, and the great number of old men and women. The negroes have lost that special aptitude for augmenting the census that characterizes them in the Antilles, and even the neighboring islands Johanna, Seychelles and Zanzibar. But the Malagash negroes breathe a scantily ozonized air. On the north side of Cuba and Jamaica large families are the rule. On the east coast of Central America multiple births are not uncommon. *La calle de los siete niños*, “the street of the seven children,”

perpetuates in its name the fecundity of a Santa Martana. In July and August, 1867, babies came in platoons along the shores of Lake Erie as a result of the high ozonic condition of the Indian summer months of the year before. At Trincomalee, in Ceylon, the most positive evidence of this peculiar influence is obtainable; the village is low, but little above the sea level, is open to the sea on the northeast, and has the jungle to the southwest. From May to September the southwest monsoon blows over the island, and in passing through the jungle gets robbed of its ozone. From October to April the northeast monsoon blows over the Bay of Bengal and arrives at the village laden with ozone. During April the winds veer from northwest to southwest, and ozone is in fair proportion. Here is a suitable field for testing its influence. For this purpose I overhauled the baptismal registers for two years kept by the Roman Catholic priests, because their religion requires a child to be baptised as soon after birth as possible. Then I had access to the public register. Then I examined the meteorological records kept at the flag-staff, and comparing the color slips, showing the ozone on board, found the proportion of ozone in the village to that of the flag staff, with the result that during the southwest monsoon, viz., from May to September, the ozone in the village was $2\frac{1}{2}$; from October to April 8. And the corresponding conceptions were 57 and 100, viz., ozone 2.5, conceptions 57; ozone 8, conceptions 100.

ATMOSPHERIC OZONE,*

AND THE BEST METHODS FOR ITS OBSERVATION.

BY A. W. NICHOLSON, M. D., OF OTISVILLE, MICH.

Such experiments as I have conducted have principally been made with Schoenbein's test of iodide of potassium and starch, that being considered the most reliable test for the presence of ozone.

While the many observations taken by those interested in studying the relation of ozone to prevailing disease are of great value, it cannot be denied that errors creep in and render many *single* observations of little value.

Often an apparent decrease in atmospheric ozone will exist when an increase will be the actual condition. There may be an error by excess of moisture, by an exposure of the test-paper to too great velocity of the wind, etc.

It has been stated that ozone is absent in dwellings. While this statement is not incompatible with any theory concerning the relations of ozone to conditions of health or disease, it is not altogether truthful; for many conditions obtain in the in-door atmosphere that occasion error in the result of a given observation, and, notwithstanding the presence of these conditions, the presence of ozone in dwellings has often been discerned by the writer and by others.

It is true that the results of experiments concerning the amount of ozone in the air above swamps are often negative, yet here there is, without doubt, a source of error in an excess of moisture.

The principal experiments conducted by myself have been to determine the presence of ozone in dwellings, and the probable influences affecting such tests; to determine the relative amount of ozone in pine forests, compared

*Michigan State Board of Health Report for 1880, page 285.

with observations taken in the open country ; to ascertain the relative amount of the same element by experiments conducted in the smoky atmosphere in proximity to a large number of "pits" for the manufacture of charcoal ; to estimate the amount of ozone existing over swamps ; and to compare the amount of the same by the exposure of tests at the differing elevations of four feet and fourteen feet from the ground. Experiments were also made with regard to the influence of decomposing animal excreta upon the test, compared with tests made one hundred feet distant from the first, or from any such element of contamination. Observations also were made to determine the effect of excess of humidity upon the test ; and, lastly, to determine the difference in the quantity of active oxygen present in the atmosphere of a malarious region with that of an atmosphere in a non-malarious region, the same test being employed in both localities, and the observations being taken at the same hours of the day.

Many of these observations may be but repetitions of those made by other observers, but the information already obtained is only sufficient to act as an incentive to other investigators to continue their labors in this direction. If there is no veritable connection between the varying proportions of ozone or active oxygen and health or disease, inquiry should be continued until the proof of this fact is substantiated. If there is a relation, though slight, the solution of the problem is worthy of the most untiring study.

In experimenting to determine the proportion in the atmosphere of oxidizing elements bearing a relation to health and disease, it does not seem necessary to employ a test that will verify only the existence of a single factor like that of ozone. Oxygen in a state of activity, whether generated by electrical or other influences, from oxygen in a nascent condition, or from products that easily liberate oxygen in a state of activity, like the essential oils, peroxide of hydrogen, or resinous compounds, is the desired factor

to be searched after by the sanitarian and etiologist. If the test detects compounds that in themselves produce a coloration of the test-paper, it appears equivalent to a determination of an equal amount of active oxygen.

Is ozone to be discovered as existing in dwellings?

Max Von Pettenkofer, of Munich, in an article in the *Contemporary Review*, entitled, "The Hygienic Influence of Plants," makes the following assertion in regard to the relation of ozone to the appearance or disappearance of disease; "But one fact which was observed from the first, shows that it cannot be so; for the presence of ozone can never be detected in our dwellings, not even in the cleanest and best ventilated. Now, as it is a fact that we spend the greater part of our lives in our houses, and are better than if we lived in the open air, the hygienic value of ozone does not seem so very great."

Such a declaration, proceeding from such an influential origin, would, if erroneous, lead to many false deductions. That it is incorrect, the succeeding exhibit of the results of observations taken by myself, appears to prove. The observations were made with Schœnbein's test, moistened before exposure. The apartment where the experiments were made was well constructed, and a free circulation from the external air permitted, when there was the greatest coloration, allowing motion to the air and access of moisture. Where least coloration occurred every avenue to the external air was closed as much as possible.

EXHIBIT A.

DATE.	INTERNAL OBSERVATION.		EXTERNAL OBSERVATIONS.		REMARKS.
	Night.	Day.	Night.	Day.	
1880.					
June 10	1	3.5	All numbers correspond to scale of 10 degrees of coloration. Strong wind.
" 11	0	1	2	3	
" 12	1	2	2.5	3	
" 13	2	2.5	3.5	3	
" 14	1	1	3.5	3	
Average	1	1.5	2.9	3.1	

During the winter, in a north room of my own dwelling, where an effort was made to exclude the factor of ventilation, a coloration of three degrees was obtained. The temperature of the room was fifteen degrees Fahr., and a strong wind was blowing from the north. Externally a coloration of nine degrees was obtained. At the same time, in another north room of the same house, where the temperature amounted to seventy degrees Fahr., a distinct trace was discernible. At another time, when the external air was quiet, there was obtained one degree of coloration in the first room, where the temperature was forty-five degrees Fahr., and in the second room no coloration, with a temperature of seventy degrees Fahr. These results would suggest that a certain amount of motion of the air exceeding that usually existing in dwellings, would be auxiliary to conditions producing a manifestation of the presence of ozone therein. That the excess of moisture *externally* over that in the *interior* of dwellings is not a factor to be considered, seems proved by experiments made by the writer in regard to effects of moisture on the test as existing in dwellings. It was found that in rooms ventilated, when the external air was not disturbed by the influence of storms, the amount of moisture (absolute humidity) internally was equal to the amount of moisture externally, and

that there was sometimes an excess of moisture in the interior of a dwelling over that exterior, when the amount of ozone was slight or entirely absent in the dwelling.

It is probable that sunshine is a condition aiding the production of ozone in dwellings, as more ozone was present during the day than night.

Prof. R. C. Kedzie says: "Ozone is doubtless formed in every sunlit room, and by its formation and destruction a vast amount of *materies morbi* may be destroyed, and it is no satisfactory proof that it is of no worth or influence because no residual ozone remains to act upon our test-paper."

Just what the influence upon the test is that is produced by the presence of carbon compounds, it is difficult to express. That its presence may modify the results of an experiment to ascertain the amount of ozone present is possible. To determine if the presence of pure carbonic acid would decolorize a slip of test-paper, already colored by exposure, I subjected a moistened slip to an atmosphere of carbonic acid by collecting the same over a pneumatic trough. On the gas being washed by passage through water the color upon the slip remained unaltered. On subjecting it to the influence of the gas as it escaped unwashed from the generator, a decolorization immediately occurred. This was found to be due to the presence of sulphurous acid.

Smoke is an element that will decolorize a slip of the test-paper already charged with liberated iodine. It is probable that the volume of smoke that usually, though imperceptibly, escapes from the stove, contains some property, perhaps that of sulphurous acid, that causes a change in the iodine as rapidly as it is liberated, resulting in the formation of a colorless iodate. To demonstrate the effect of gases, or smoke, generated by the stove, I introduced a glass tube through an opening of the stove into the midst of burning coals, and into the outer extremity of the tube I placed some of the test-paper already colored by the action

of ozone. The result was a marked loss of the color on the paper. That this was not due to the action of increased temperature was proved by exposing a similar paper to the action of the same temperature at other points.

Although it is apparent that the amount of ozone in dwellings is actually less than that in the external air, it is also true that there exist agents that at present prevent an accurate estimate from being obtained by Schoenbein's test. That active oxygen bears to organic life—to physiological and pathological conditions—some essential relation, is a proposition yet open for discussion. To declare that its presence in dwellings is not proved is apparently an error. Even were it absent from dwellings, that circumstance could not prove its non-relation to health or disease. Without endeavoring to court discussion upon this important subject, it seems plausible to the writer that no oxygen enters the blood in any other state than as active oxygen. It may be that the large area of the alkaline pulmonary secreting surface, subject to the results of continuous evaporation, is in a condition to effect a generation of sufficient active oxygen to supply the blood with that which it requires. The excess in the external atmosphere may be of importance to the individual when a decrease in the external temperature intuitively directs him to take less deep inspirations than the warmer and drier atmosphere of the dwelling demanded, thus rendering the labor of the lungs less in supplying a given quantity of oxygen to the blood. If it should be objected that the ratio of active oxygen necessary to sustain the physiological requirements of the blood is not constant, I would inquire if the ratios of most meteorological conditions are constant.

During portions of the months of March and April, 1878, while the ground was frozen, and part of the time overspread with snow, I secured a record of observations of the amount of ozone in a small pine forest, about eight miles distant from my usual point of observation. The

following exhibit represents the comparative amount existing at both places at the same time:

EXHIBIT B.

DATE. 1878.	PINE FOREST.		OPEN COUNTRY.		DATE. 1878.	PINE FOREST.		OPEN COUNTRY.	
	Night	Day.	Night	Day.		Night	Day.	Night	Day.
March 4.....	6	5	8	4	March 20.....	4	5	5	3
" 5.....	6	5	6	4	" 21.....	5	4	4	4
" 6.....	6	5	4	5	" 22.....	5	4	8	5
" 7.....	6	5	10	8	" 23.....	5	5	5	5
" 8.....	4	4	8	7	" 24.....	4	6	4	6
" 9.....	5	4	5	4	" 25.....	5	5	5	5
" 10.....	5	5	8	4	" 26.....	5	5	5	5
" 11.....	5	5	6	8	" 27.....	4	4	8	5
" 12.....	5	5	10	9	" 28.....	4	4	9	8
" 13.....	6	5	10	9	" 29.....	4	5	8	4
" 14.....	4	5	8	9	" 30.....	5	5	4	4
" 15*.....	2	4	1	4	" 31.....	5	5	9	8
" 16.....	5	5	10	8	April 1.....	5	5	5	7
" 17.....	5	5	9	10	" 2.....	5	4	5	3
" 18.....	4	5	9	8	" 3.....	4	3	4	3
" 19.....	6	5	8	7					
					Average.....	4.80	4.70	6.93	5.90

*Frost on night ozonoscope.
NOTE.—Night observations, from 9 P. M. to 7 A. M.; day observations, from 7 A. M. to 2 P. M.

It is generally believed that ozone, or that product nearly identical in its nature, the peroxide of hydrogen, exists in excess amidst coniferous vegetation over that found in most other regions, but the above exhibit presents results contrary to that which ought to be expected to exist. This difference is, no doubt, in a great degree due to the time of year being when there was the least development of vegetable products, to the more confined circulation of the air, and perhaps to excess of humidity. The ground was low.

During the preceding summer, in the months of August and September, I secured the results of observations taken in the same pine forest, as represented in the following exhibit :

EXHIBIT C.

DATE. 1877.	PINE FOREST.		OPEN COUNTRY.		DATE. 1877.	PINE FOREST.		OPEN COUNTRY.	
	Night	Day	Night	Day		Night	Day	Night	Day
Aug. 25	3	4	1	4	Sept. 11.....	0	1	1	2
" 27	4	8	3	4	" 12.....	2	3	3	3
" 28	1	1	0	1	" 13.....	0	3	0	2
" 29	3	4	2	3	" 14.....	0	4	0	3
" 30	1	3	1	2	" 15.....	3	3	2	3
" 31	4	2	3	4	" 16.....	2	3	2	3
Sept. 1	4	4	4	3	" 17.....	4	4	3	4
" 2	1	4	3	3	" 18.....	3	4	1	4
" 3	3	3	3	4	" 19.....	3	4	2	4
" 4	3	4	3	4	" 20.....	1	3	1	2
" 5	2	3	2	3	" 21.....	1	4	1	3
" 6	3	3	3	4	" 22.....	2	3	0	3
" 7	1	4	1	4	" 23.....	3	4	1	3
" 8	1	3	1	3	" 24.....	3	2	3	3
" 9	1	4	1	4	" 25.....	1	2	2	3
" 10	3	1	3	3	Average.....	2.09	3.13	1.80	2.16

In the above exhibit we find a considerable difference in the two averages of night ozone, that found in the pine forest being in excess. The variation in the amount of ozone ascertainable during the day was slight. Were a sanitarium to be established in the vicinity of a pine forest for the sake of the salubrity of its immediate atmosphere it would appear expedient to consider other elements liable to affect the health, than ozone alone.

EXHIBIT D.

DATE. 1877.	COAL PITS.		OPEN COUNTRY.		DATE. 1877.	COAL PITS.		OPEN COUNTRY.	
	Night	Day	Night	Day		Night	Day	Night	Day
Aug. 1	2	3	2	4	Aug. 12.....	2	3	3	4
" 2	1	2	1	2	" 13.....	2	3	3	4
" 3	1	3	1	4	" 14.....	1	3	3	4
" 4	1	2	0	3	" 15.....	1	3	2	4
" 5	1	3	1	4	" 16.....	1	5	1	2
" 6	2	4	4	4	" 17.....	2	3	1	3
" 7	1	3	2	3	" 18.....	1	3	0	4
" 8	1	4	3	3	" 19.....	1	2	1	4
" 9	1	4	3	4	" 20.....	2	2	1	4
" 10.....	2	3	3	4	" 21.....	1	2	2	4
" 11.....	1	4	0	3	Average.....	1.33	3.00	2.71	3.57

Exhibit D records the results of observations taken in the borders of a pine forest, but in close proximity to coal-pits, as compared with those taken at a distance and free from any known cause of local disturbance to the test.

The heavy night air at the pits was surcharged with smoke that during the daytime was less concentrated. The results of the observations at this point were, at night, almost negative, although recorded as one degree of coloration whenever a trace was discernible. The negative results obtained here are accounted for by the presence of the discolorizing carbonaceous elements of the atmosphere associated with the element of excess of humidity. It does not seem unreasonable to conclude that the quantity of ozone present in an atmosphere subjected to the above mentioned influences, cannot be determined by the employment of Schœnbein's test.

During the construction of these coal-pits, in the year preceding these experiments, the amount of sickness at, and near to, them was very great. In a population amounting to one hundred and fifty, nearly one-fourth were simultaneously afflicted with fevers of a periodic type. Clay and porous soils were being overturned for the first time, and large belts of timber were being felled, opening avenues for swamps and ponds. The greatest prevalence of sickness was during the burning of some of the pits first constructed. The season during which the observations were taken was marked by a diminution in the number of cases of fever.

Another month's observations taken at the same place gave results almost identical to those above given.

The following exhibit represents the comparative amount of ozone existing over a swamp two miles from the point where the observations were taken with which they are compared. They were also taken simultaneously with those observations relating to the quantity of ozone existing in a pine forest.

EXHIBIT E.

DATE. 1877.	OVER SWAMP.		POINT FREE FROM SUCH INFLUENCES.		DATE. 1877.	OVER SWAMP.		POINT FREE FROM SUCH INFLUENCES.	
	Night.	Day.	Night.	Day.		Night.	Day.	Night.	Day.
Aug. 26	1	2	1	4	Sep. 10	0	0	1	3
" 27	1	2	3	4	" 11	0	1	1	2
" 28	1	1	0	1	" 12	0	3	3	3
" 29	1	3	2	3	" 13	0	1	0	2
" 30	1	1	1	2	" 14	0	2	0	3
" 31	4	5	3	4	" 15	2	2	2	3
Sept. 1	0	1	4	3	" 16	1	2	2	3
" 2	0	0	3	3	" 17	0	3	3	4
" 3	0	1	3	4	" 18	0	1	1	4
" 4	0	3	3	4	" 19	0	1	2	4
" 5	0	1	2	3	" 20	0	5	1	2
" 6	0	1	3	4	" 21	0	4	1	3
" 7	0	1	1	4	" 22	0	0	0	3
" 8	0	3	1	3					
" 9	0	5	1	4	Av'ge.	0.44	1.92	1.78	3.17

In the above exhibit a great difference is seen to exist between the averages of the two points of observation.

Whether this difference is due to the emission of gases destructive to a large portion of the atmospheric ozone naturally present, or whether the same interferes with a deposition of liberated iodine, or whether the apparent absence is due to an excess of moisture sufficient to decolorize the paper, are inquiries that can only be determined by experimentation. The excess of humidity naturally present at such a point appears to offer some explanation.

The experiments over the swamps were made by suspending slips of test-paper about three feet above the soil. They were exposed to a free circulation of the air, but protected from the sunlight. During the time these observations were being taken the several families residing near this swamp suffered more or less from frequent attacks of periodic fever.

With a view to ascertain the comparative results of observations for the presence of ozone as it existed at two differing points of elevation, fifty-four observations were conducted at the elevations of four and fourteen feet from the ground.

The following exhibit contains the results of these observations:

EXHIBIT F.

HIGHER ELEVATION.		LOWER ELEVATION.		REMARKS.
Night	Day.	Night	Day.	
4	9	7	9	Rain all day.
8	8	9	7	Rain all day.
7	7	8	8	Rain all day.
9	5	8	5	Rain in night.
4	4	8	6	Rain in morning.
7	5	8	5	Rain all day.
4	5	5	6	Fair.
5	5	6	5	Fair.
4	3.5	4	3.5	Fair.
4	3.5	3	3.5	Rain in night, paper lost color.
1	4	2	4	Fair.
2	3	2	3	Fair.
3.5	.....	3.5	.....	Fair.
1	4	3.5	4	Fair.
Average.	4.53	5.07	5.50	5.30

These observations do not demonstrate that actually a greater quantity of ozone was present in the lower stratum of the air than in the upper. The variation of the degree of moisture at the two points may lead to an explanation; yet the excess of ozone at the lower plane seemed to correspond with the presence of aqueous precipitation and a consequent pulverization of the rain-drops. This might have led to the generation of ozone by increase of electrical influences, as spoken of by Fox in his work on "ozone."

At the suggestion of Dr. Baker, I directed my attention to the relative quantity of ozone existing near decomposing animal excreta as compared with that found one hundred feet distant from any such contaminating influence.

EXHIBIT G.

DATE, 1879.	IMPURE AIR.		PURE AIR.	
	Night.	Day.	Night.	Day.
June 9.....	2.5	3.5	4.5	3.5
" 10.....	2	2.5	3.5	3.5
" 11.....	1	3	2	3
" 12.....	2	2.5	2.5	3
" 13.....	3	.....	3.5	
" 14.....	3	3	3.5	3
Average.....	2.3	2.9	3.3	3.2

Both ozonoscopes were suspended at a distance of six feet from the ground, and both were subjected to the influence of the same degree of atmospheric humidity. It is therefore probable that the variation in the degree of coloration was due to the exposure of one ozonoscope to the influences of rapidly oxidizing effete material.

In considering the influences existing that might have occasioned an error in the results of the observations recorded in the foregoing exhibits, none is more apparent than that of excess of moisture. Some atmospheric conditions associated with twenty observations where there was a total absence of coloration are shown in the succeeding exhibit:

EXHIBIT H.

Number of Case.	Lowest Temperature.	Velocity of Wind—Miles per Hour.	Relative Humidity	REMARKS.
1.....	44	2	75	Few clouds.
2.....	37	2	96.6	Cloudy. Frost on test-paper.
3.....	34	2	96.6	Frost.
4.....	■	2	96.6	Slightly cloudy.
5.....	32	■	96.6	Slightly cloudy.
6.....	32	2	96.6	Slightly cloudy.
7.....	32	2	96.6	Slightly cloudy.
8.....	25	2	100	Slightly cloudy.
9.....	41	2	96.6	Slightly cloudy.
10.....	45	12	100	75 per cent. of clouds. Heavy dew.
11.....	44	2	100	Heavy dew.
12.....	57	2	100	Smoky,—75 per cent. of clouds.
13.....	44	■	85	Heavy dew.
14.....	44	2	100	Heavy dew. No clouds.
15.....	44	2	■	Heavy dew.
16.....	59	2	100	Heavy fog,—50 per cent. clouds.
17.....	40	■	96.6	Heavy fog,—75 per cent. clouds.
18.....	49	2	96.6	Heavy dew. No clouds.
19.....	25	■	100	Frost. No clouds.
20.....	57	2	96.6	90 per cent. clouds.

The above cases represent nearly all those of complete obliteration of color occurring during a period of three years. *These all occurred during the night observation.* With each case there was nearly, or quite, a complete saturation of the atmosphere with moisture.

In one hundred and forty-three observations taken by myself to determine the relative value of Schoenbein's test when exposed to the air dry, and when exposed after having been previously moistened, I discovered an excess of coloration in the dry slip over that of the wet slip forty times, the largest excess being five degrees of coloration. During these forty instances the sky was covered with one hundred per cent. of clouds. In only six instances in the whole number of observations was the wet slip colored in excess of the dry when there was one hundred per cent. of clouds. When there was less than seventy-five per cent. of clouds the *moistened* slip was more greatly colored than the dry. While I at one time thought it possible that some electrical

phenomena might be a cause of the ozonoscopic conditions just mentioned, I am now disposed to believe the cause to bear relation more to hygrometric states influenced by the varying per cent. of clouds. A *dry* slip is exposed to the influences of these conditions, and a gradual deposition of the moisture upon the same aids rather than retards the coloration. But when a *moistened* slip is exposed to the influences of these conditions of the atmosphere it is liable to become blanched as fast as the iodine is deposited. Cornelius B. Fox says: "If the iodine of starch be so slightly soluble in water, how does it happen that these tests often and rapidly become, when they are wet, completely blanched? If a deeply tinted Negretti's test be cut into small portions and placed in a little distilled water, some difficulty will be experienced in rendering the fragments colorless. Many hours, and perhaps a day or two will elapse before all color is removed from them. If, on the other hand, a colored Negretti's test be kept in a moist condition with distilled water, conducted to it by a fine thread of lamp wick or darning-cotton, the color will rapidly disappear. In the latter experiment the iodide of starch becomes vaporized from the test."

It is thus proved that in more than one-fourth of the cases where observations are taken with Schœnbein's test, providing the same proportion of days all cloudy existed as above illustrated, the dry slip will exhibit the greatest coloration, and in the remaining cases the deepest tint would be exhibited by means of the wet slip.

Through the kindness of a friend residing in Litchfield county, of the State of Connecticut, I was enabled to secure results of ozonometric observations among its non-malarious hills, during the summer of the year 1878. The record of these observations is presented in the following exhibit in comparison with the record of observations taken at this point, where periodic fevers prevail:

EXHIBIT I.

DATE, 1878.	LITCHFIELD COUNTY, STATE OF CONNECTICUT.		OTISVILLE, MICHIGAN.		DATE, 1878.	LITCHFIELD COUNTY, STATE OF CONNECTICUT.		OTISVILLE, MICHIGAN.	
	Night.	Day.	Night.	Day.		Night.	Day.	Night.	Day.
Aug. 6	4	5	3	3	Sept. 9	0	2	4	2
" 7	4	4	3	3	" 10	0	2	2	2
" 8	3	3	3	4	" 11	0	4	2	2
" 9	4	6	3	4	" 12	2	3	3	3
" 10	4	4	3	4	" 13	1	3	4	4
" 11	3	4	1	1	" 14	0	2	4	1
" 12	3	4	0	3	" 15	2	3	1	2
" 13	1	3	3	3	" 16	0	2	5	3
" 14	0	2	4	3	" 17	0	3	2	3
" 15	0	3	4	3	" 18	0	3	3	3
" 16	2	3	4	3	" 19	2	3	3	3
" 17	2	3	1	3	" 20	2	2	3	4
" 18	2	4	0	3	" 21	1	2	3	3
" 19	0	3	0	3	" 22	2	3	1	3
" 20	1	3	3	3	" 23	0	2	3	2
" 21	1	3	4	4	" 24	0	3	3	4
" 22	1	2	1	4	" 25	2	3	3	3
" 23	0	3	3	2	" 26	1	2	4	3
" 24	0	2	4	3	" 27	3	3	1	3
" 25	0	3	3	3	" 28	1	3	3	3
" 26	0	1	3	3	" 29	0	3	4	2
" 27	0	2	0	3	" 30	0	2	4	2
" 28	0	3	0	3	Oct 1	0	2	3	3
" 29	0	3	0	3	" 2	2	3	4	3
" 30	0	3	0	3	" 3	3	3	3	2
Sept. 1	0	3	3	2					
" 2	0	2	4	3					
" 3	0	3	4	4					
" 4	2	1	3	3					
" 5	4	1	0	3					
" 6	2	2	0	3					
" 7	0	2	4	4					
" 8	1	3	4	2					
Avg'rs.						1.38	2.82	2.77	2.90

* Heavy dew in morning.

† Great amount of moisture in night.

‡ Fog in morning.

§ Frost in morning.

The small quantity of ozone exhibited for the night in the record obtained from Connecticut impresses one with the belief that some atmospheric conditions existed that failed to testify to the actual amount of ozone present. Excessive moisture appears to have been one of these conditions, as reported by the observer to me.

As local conditions greatly affect the test for ozone, the observations that might be taken in other parts of this mountainous country might present results more in unison with the popular belief that active oxygen exists in greatest quantities amidst the mountains.

As spoken of, the velocity of the wind, if it is great, and the air is saturated with moisture, will occasion a decolorization of the test-paper unless protected from its influence. But if a test paper be exposed to the free action of the

wind when the air is not saturated with moisture a greater coloration will often occur than when *protected* from the action of the wind.

COLORATION OF BOTH SIDES OF THE TEST-PAPER.

Although Schœnbein's test is considered the most reliable in use for the detection of ozone, something yet remains to be done in order to render even this test perfect, exclusive of the effects of such conditions as already have been mentioned.

In the manufacture of the test paper I use, only one side of it is covered with the preparation that by chemical alteration and change of color enables us to estimate the relative amount of ozone present. In this connection Dr. H. B. Baker remarks that "Some test paper prepared in Germany, examined by me, seemed to be like Swedish filter-paper; it was of loose texture, and on exposure was soon colored on both sides alike, but the degree of coloration was more uniform under varying conditions than it is on the paper used by the observers in Michigan. The loose texture paper seemed to be exceedingly prone to take on a color equaling from 2 to 4 on our scale, but did not seem to be as ready to show shades above or below those. On comparing it with our paper, it was found to fade quicker after being moistened, and I came to believe that it was not so accurate as is ours for the purpose of indicating the relative qualities of ozone in the atmosphere." In examining the test-paper, after exposure, I have frequently found that the side of the paper upon which there was none of the preparation, exhibited the greater coloration. To determine, if possible, the cause of this, I recorded in a series of observations, as shown in the following exhibit, the degrees of coloration that appeared upon both sides of the paper. In the first series the number of observations was 34. In 19 of these observations there was the deeper coloration on the side not having the preparation on it. The same degree of coloration occurred upon both sides at

once in 13 instances. There was a deeper coloration on the side containing the compound of starch and iodide of potassium, twice:

EXHIBIT K.

First Series of Observations on the Influence of Relative Humidity upon the Coloration by Ozone of Both Sides of the Test-paper.

COLORATION, MARKED ON A SCALE OF 10°.		RELATIVE HUMIDITY.—PER CENT. OF SATURATION OF THE AIR AT THE BEGINNING OF THE EXPOSURE WHEN THE COLORATION WAS AS SPECIFIED.				
On Front of Test-paper.	On Back of Test-Paper	All Observations in the Series.	Greatest Color on Front of Paper.	Same Color on Both Sides.	Greatest Color on Back of Paper.	
2	2	82.3	.....	82.3	.....
1	2	95.3	.....	.....	95.3
2.5	3	95.3	.....	.....	95.3
2	3	76.0	.....	.....	76.0
2	3.5	84.2	.....	.....	84.2
2.5	3.5	76.0	.....	.....	76.0
2.5	3.5	74.9	.....	.....	74.9
2.5	3.5	87.1	.....	.....	87.1
1	2	100.0	.....	.....	100.0
3.5	3	89.3	89.3	.....	.....
1.5	2.5	81.4	.....	.....	81.4
3.5	3.5	100.0	.....	100.0	.....
3	■	100.0	.....	100.0	.....
2	3.5	76.0	.....	.....	76.0
2.5	2	100.0	100.0	.....	.....
3.5	3.5	100.0	.....	100.0	.....
2	3	53.7	.....	.....	53.7
2.5	3.5	87.1	.....	.....	87.1
2	2	93.2	.....	93.2	.....
3	3.5	86.4	.....	.....	86.4
3	4	85.8	.....	.....	85.8
2.5	2.5	92.6	.....	92.6	.....
3	3	92.8	.....	92.8	.....
2.5	3.5	86.6	.....	.....	86.6
2.5	3.5	93.1	.....	.....	93.1
3	3.5	71.0	.....	.....	71.0
3.5	3.5	100.0	.....	100.0	.....
3	3	94.4	.....	94.4	.....
3	3	100.0	.....	100.0	.....
2.5	2.5	95.0	.....	95.0	.....
3	3.5	85.8	.....	.....	85.8
■	3	80.5	.....	80.5	.....
1.5	2.5	69.4	.....	.....	69.4
2.5	2.5	100.0	.....	100.0	.....
Total.....	85.5	102.5	2986.1	189.3	1230.8	1566.0
Averages	2.51	3.01	87.8	94.7	94.7	82.4

Assistant Professor F. S. Kedzie, of the Agricultural College, at Lansing, Mich., suggests that these conditions may appear from the existence of a thin film, or tough pellicle, sometimes formed over the starch compound, thus preventing the access and ready action of ozone in setting free the iodine; the degree of coloration varying according to the condition of the surface of the test-paper, and according to certain conditions of atmospheric humidity existing at the time of the exposure of the test.

It is probably true that varying conditions of moisture have a marked influence with other influences producing the results referred to.

In sixteen of the nineteen instances where there was a deeper tint on the back of the paper the relative humidity was less than ninety per cent., ranging from fifty-three per cent. upwards. In three instances where there was the deeper tint upon the back the relative humidity exceeded ninety per cent. In only one instance did the relative humidity mount to one hundred per cent. In only three instances out of the fifteen when the front had a coloration equal to that upon the back of the test-paper, or a greater coloration, the relative humidity was less than ninety per cent. In twelve instances when the coloration upon the front was equal to, or greater than that upon the back, the relative humidity exceeded ninety per cent. In seven of the fifteen instances when the degree of coloration on the front was equal to, or greater than, that upon the back, the relative humidity was one hundred per cent. This would seem to prove that conditions of moisture have a decided influence in affecting the phenomena in question.

After an exposure of the test-paper for a time sufficient to produce a coloration, if there is a deeper tint upon the back than on the front side a removal of a thin portion of the starch from the front will not disclose as deep a tint as there is upon the back, nor will as marked a coloration appear in front until all the starch is removed, when both sides of the paper exhibit the same degree of discoloration.

The paper which is used in preparing the test readily absorbs a portion of the solution of iodide of potassium contained in the starch compound, and on exposure to oxidizing elements exhibits chemical change as well as the prepared starch. The difference in the texture of the paper itself from the texture of the starch compound would suggest the existence, in the paper and compound, of differing qualities for the absorption of moisture.

An *average* degree of moisture seems to be a condition rendering the paper saturated with a solution of iodide of potassium in starch-water a more delicate test than the starch and iodide of potassium test. Where *excess* of moisture obtains, the starch and iodide of potassium test appears to be the most reliable.

The preceding exhibit does not contain an extensive series of observations as we would wish to have in order to establish conclusive evidence, but was all we had at the time of writing the foregoing. Since that time additional observations have been made, and the results are shown in the following exhibit:

EXHIBIT L.

Second Series of Observations on the Influence of Relative Humidity upon the Coloration by Ozone of Both Sides of the Test-paper.

COLORATION, MARKED ON A SCALE OF 10°.		RELATIVE HUMIDITY - PER CENT. OF SATURATION OF THE AIR AT THE BEGINNING OF THE EXPOSURE WHEN THE COLORATION WAS AS SPECIFIED.			
On Front of Test-paper.	On Back of Test-paper.	All Obser- vations in the Series.	Greatest Color on Front of Paper.	Same Color on Both Sides.	Greatest Color on Back of Paper.
3.5	3.0	100.0	100.0	.....	.....
3.0	3.5	85.8	.....	.....	85.8
3.5	4.5	75.5	.....	.....	75.5
2.5	3.0	86.2	.....	.....	86.2
1.5	3.0	83.4	.....	.....	83.4
4.0	4.0	100.0	.....	100.0	.....
3.5	3.0	100.0	100.0	.....	.....
5.0	4.0	91.3	91.3	.....	.....
3.5	2.5	85.8	85.8	.....	.....
2.0	3.0	74.5	.....	74.5	.....
2.0	3.5	75.9	.....	.....	75.9
3.0	3.0	84.0	.....	84.0	.....
3.0	3.0	91.4	.....	91.4	.....
3.5	4.0	83.4	.....	.....	83.4
3.0	2.5	83.4	83.4	.....	.....
7.0	3.0	93.1	93.1	.....	.....
3.0	2.0	100.0	100.0	.....	.....
8.0	3.0	91.4	91.4	.....	.....
3.0	2.5	91.6	91.6	.....	.....
4.0	2.5	100.0	100.0	.....	.....
3.0	2.5	100.0	100.0	.....	.....
3.0	3.0	90.6	.....	90.6	.....
2.5	4.0	100.0	.....	.....	100.0
3.5	3.5	100.0	.....	100.0	.....
4.0	4.5	79.3	.....	.....	79.3
2.5	2.5	92.6	.....	92.6	.....
2.5	3.0	84.0	.....	.....	84.0
3.0	3.0	100.0	.....	100.0	.....
4.0	3.0	92.6	92.6	.....	.....
2.0	3.0	79.3	.....	.....	79.3
2.5	3.0	69.6	.....	.....	96.6
3.5	2.5	93.2	93.2	.....	.....
3.0	3.0	100.0	.....	100.0	.....
4.0	3.5	92.6	92.6	.....	.....
3.5	3.5	100.0	.....	100.0	.....
8.0	6.0	100.0	100.0	.....	.....
6.0	5.0	90.5	90.5	.....	.....
3.5	2.5	100.0	100.0	.....	.....
3.0	4.0	83.4	.....	.....	83.4
Totals...	139.5	128.5	3524.8	1605.5	933.1
Average	3.58	3.29	90.4	94.4	93.3
Av. of both ser.	3.08	3.16	89.2	94.5	94.1

In the foregoing exhibit the statement of the relative humidity is made for the time when the test-paper was put out for exposure. In nearly all the cases where there was *less* coloration on the back of the paper than on the front, and a relative humidity of *less* than ninety per cent. at the time the test-paper was put out, the relative humidity was over ninety per cent. when the paper was compared with the scale, showing that there was an increase of moisture after the paper was first exposed.

When the back of the paper was the most deeply colored, and on its first exposure the relative humidity was more than ninety per cent. (another exception to the general rule), there was almost always a considerable decrease in the relative humidity.

SUGGESTIONS FOR IMPROVED METHODS OF OBSERVATIONS.

Negative results obtained by the exposure of Schoenbein's test-paper in dwellings seem to be due as much to elements affecting the liberated iodine as to absence of ozone. This test, then, seems to be of little use in determining the presence of ozone in dwellings.

Valuable as are the general results of ozonometric observations, it is obvious that many of them are clouded with error. How to remove these errors is a subject important to all those interested in the study of ozonometry as to its meteorological, physiological, or pathological relations. Much study is yet necessary before the best methods for accurately estimating the quantity of ozone present at any time in the atmosphere will be determined. In the use of Schœnbein's test, in order to obtain the maximum results of an observation where it is necessary to guard against excess of moisture, the exposure of a dry and wet slip at the same time, would appear to be a proper method to adopt; also to suspend them at such points as where the condensation of vapor would be least liable to occur. To make the period of time less for the exposure of test-paper would be another means to obtain maximum results of an observation.

It is well known that by increased velocity of the wind more ozone may be carried to a given point than there would be if the velocity were less. To determine the quantity of ozone, therefore, liable to affect the health of an individual subjected to the influence of rapid currents of air, it is desirable to expose the test-paper to the same current. But the loss of the liberated iodine as a result of such exposure, suggests that in order to obtain the *deepest* coloration the slip must be protected from too great velocity of the wind, especially when there is an excess of moisture in the atmosphere.

GULF COAST QUARANTINE.

A RERORT

BY

G. B. THORNTON, M. D.,

OF MEMPHIS, TENNESSEE.

MEMBER OF THE STATE BOARD OF HEALTH, AND ITS DEL-
EGATE TO THE QUARANTINE CONFERENCE, HELD
AT NEW ORLEANS, JUNE 2, 3 AND 4, 1884.

GULF COAST QUARANTINE.

GENTLEMEN—In compliance with a resolution passed at a called meeting of your Board, May 20th, I visited New Orleans and participated in the Conference, June 2d, called by the Louisiana State Board of Health, May 8th, of "representatives of the State Boards of Health of Florida, Alabama, Mississippi, Texas and Louisiana, for the purpose of bringing said Boards into harmony, and, if possible, to devise and recommend improvements in the system of quarantine in use along the Gulf coast, etc."

Though Tennessee was not included in the original call, I was admitted as a delegate on the letter of invitation from Dr. Joseph Holt, President of the Louisiana State Board of Health, to Dr. J. Berrien Lindsey, President of the Tennessee State Board, to send a delegate to said Conference. This letter was construed by the Conference as authoritative and proper.

A full report of the proceedings of the Conference, published in the New Orleans papers—*Picayune* and *Times-Democrat*—of June 3d, 4th and 5th, is herewith submitted and made a part of this report. The chief interest that this Board felt in a Conference of Boards of Health of the Gulf States was the prevention of the introduction of yellow fever into New Orleans, the commercial metropolis of the South, and the port of entry for the Mississippi Valley country, and from whence the disease had been introduced into Memphis and West Tennessee on each occasion of its appearance in our State.

The want of confidence expressed by this Board, by its acts of quarantine and inspections on the river and railroads since 1880, which want of confidence was partici-

pated in by our neighboring States of Mississippi and Arkansas, in the ability and existing methods of the local authorities to prevent the introduction of yellow fever through Southern ports, induced me to introduce the following preamble and resolution, indicating a medium through which the Boards of Health there represented could harmonize and obtain "improvements in the system of quarantine in use along the Gulf coast:"

WHEREAS, There is absolutely no safety from yellow fever in the Mississippi Valley country if vessels are allowed to enter the Mississippi river from an infected port at a time of the year when the infection is liable to spread; and,

WHEREAS, The United States Marine Hospital Service, the only Federal authority invested with adequate funds for the work, has opened the quarantine station on Ship Island, and is likewise invested with power to co-operate with State and local authorities, if called upon by them, and maintain quarantine and inspection stations along the coast; therefore,

Resolved, That the Marine Hospital Service be called upon to assume the charge and responsibility of this coast quarantine and inspection service for the next four months.

The resolution, though meeting with a second, was promptly laid upon the table without discussion. Some of the reasons for introducing it may be briefly stated:

This department of the Federal service was operative, and at the time had the refuge station on Ship Island in commission and had two vessels in quarantine. It performed efficient service on this coast last summer; the Louisiana State Board of Health had endorsed and co-operated with it. (See page 87, report of Louisiana State Board of Health for 1880, 1881, 1882 and 1883, by Joseph Jones, M. D., President.) The Pensacola Board of Health had likewise co-operated with it in 1883, having called upon it through the Governor of Florida. (See report of the United States Marine Hospital Service for the fiscal year 1883, page 55.) The beneficial results of that co-operation are attested by the allaying of the apprehension of danger in a great measure and in the prevention of the in-

roduction and control of the disease along the Gulf coast last summer. I was justifiable in assuming that a similar arrangement would be acceptable to the present Board, from the following extract from the address by President Holt on the opening of the Conference: "It is the firm intention of the Board of Health of the State of Louisiana to adhere strictly to the policy of the quarantine pursued last year, and during the present summer and fall to push to the extreme verge of the law the restrictive measures heretofore enforced. Reorganizing in the opening of an active campaign, it can follow no other course, however much convinced of the possibility of improvement." And also from the following resolution inviting co-operation, which I select from a series adopted by the Louisiana State Board of Health, April 12, 1884:

"Resolved, That while this Board will maintain its just prerogatives as a department of the State government, it invokes the co-operation and confidence of any and all organizations, at home and abroad, that may be laboring to promote or protect the public health."

Texas called upon and co-operated with this service in 1882, in the management of the Brownsville epidemic. (See report of the Supervising Surgeon-General of the United States Marine Hospital Service for 1883, page 52.)

In view of the above, it would seem the consideration of this subject would engage the attention of this Conference, for a short time at least. The fate of this resolution was not encouraging, but as the Tennessee and Mississippi State Boards, the New Orleans Auxiliary Sanitary Association represented, and other State and Local Boards of Health not represented in this Conference, though directly interested in maritime quarantine affecting the Gulf ports, were committed to the policy of Federal co-operation through another channel, I deemed it but just to give the Conference an opportunity to express itself on another proposition looking to the same end. With that view I moved the following:

Resolved, That a Committee of three be appointed to draft suitable resolutions, memorializing Congress to reinvest the National Board of Health with proper means for co-operating with State and Local Boards of Health in the prevention of the introduction and spread of infectious diseases (notably yellow fever), when called upon by them.

A motion to table this resolution prevailed before it met with a second, the Tennessee and Mississippi State Boards voting in the negative on the motion to table. (See second day's proceedings.) With their present facilities for quarantine, the sanitary authorities of the Gulf States do not inspire that confidence abroad which it is to the interest of every Southern port to enjoy. They confessedly have not the ability to cope successfully with this question. The following extract from the inaugural address of President Holt, of the Louisiana State Board of Health, delivered April 24th, is an admission of this, and at the same time an appeal to his State, which should at once remove all just cause from want of means to establish confidence by having his Board placed upon a footing commensurate with the situation, and enable it to satisfy all just demands upon it. Louisiana owes this to herself as well as to the vast country which is tributary to New Orleans as its commercial mart. The press and the people have welcomed us most kindly, and have spoken in terms of great consideration, but have not hesitated to tell us: "This city must be kept healthy. This great work has been imposed upon you, and you are expected to perform it." "These are the figures: In a district of 57,000 people we have two sanitary officers; in the Second district, population 45,000, are two officers; in the Third, 45,000 people, two officers; in the Fourth district, population 38,000, two officers; in Algiers, covering a vast area, 9,000 people, one officer; in the Sixth and Seventh districts, population 22,000, scattered over several square miles, is one officer. Pay of officers, \$50 per month; annual allowance to Board of Health from city, \$6,000; annual allowance to Board of Health from State, a resolution

of thanks. But for the scanty and contested pittance gleaned from quarantine, and the yet smaller mite from the office of the Recorder of Marriages, Births and Deaths, we would be absolutely penniless. Our city and State are becoming to us as Egyptian task-masters: 'Go therefore, now, and work, for there shall be no straw given you, yet shall ye deliver the tale of bricks.' * * * When we undertake to accomplish a \$50,000 work with \$6,000, and the work of eighty men with ten men, without horse or cart, this is a responsibility which rests upon the city of New Orleans and the State of Louisiana." Of all cities in this country, New Orleans requires a health service well equipped in all its appointments, for a strict quarantine and local sanitary work. But the quarantine feature is the one we are mostly interested in and now discussing, and not its local sanitation, which is, however, admissible if time and space permitted. The importance of municipal sanitation being one of the subjects suggested in the circular letter of May 12th, and President Holt, in the address above quoted, uses the following significant language to one whose business it is to study the possibilities or probabilities of again acquiring yellow fever from New Orleans: "There are those—and I announce myself as of their number—who hold that it is possible, and experience abundantly justifies the declaration, that yellow fever may be called into activity in New Orleans without recent importation or importation at all, so far as we are able to decide. I have myself seen the disease appear here under circumstances which baffled every effort of attending physicians and Boards of Health, with their corps of sanitary police, to detect the slightest clew to importation." It is no idle curiosity or morbid feeling of inquisitiveness that prompts Tennessee to inquire into the sanitary affairs of its Southern neighbors. Memphis is to Tennessee what New Orleans is to Louisiana—its commercial city; and between the two there are constant and intimate commercial relations, both by river and rail, which are annually increasing.

Neither the Tennessee State Board nor the Memphis Local Board of Health wish to disturb those relations which it is their duty to preserve, as far as public health is concerned. Especially would they regret the necessity for an official act which would excite suspicion against New Orleans, when it is preparing for its great Exposition, and inviting exhibitors from all parts of the world to place their exhibits there at a period when yellow fever is liable to develop. While I feel this way, and so stated before the Conference, I also distinctly stated that if notified of the existence of one case of yellow fever in New Orleans, the appliances of quarantine would be at once placed in commission, and while everything would be done compatible with official duty to allay public apprehension and preserve intact commercial intercourse, the appliances would be at hand for the enforcement of non-intercourse if it appeared the preservation of the public health demanded it. In stating this, I felt assured I reflected the sentiment of that portion of Tennessee most interested in this question. I am satisfied the Boards of Health along the Gulf coast, especially the Louisiana State Board of Health, will do all in their power to preserve the public health and to merit public confidence. In my opinion there is no doubt as to their honesty of purpose, and a sincere desire on their part to discharge faithfully and efficiently the duties devolving upon them; but the facilities at their command are not what they should be. The quarantine and disinfecting appliances so graphically described in Dr. Holt's admirable address are not what he has, but what he would have, if he could. The plan proposed, when established, will no doubt answer the purpose sought, which is to have a refuge station near the mouth of one of the outlets of the Mississippi river, and require all infected vessels to go there for treatment before they are allowed to approach or have communication with the city. But the proper legislation is yet to be had, and the ways and means provided by the Louisiana

Legislature for this new station. In the meantime, I think Ship Island the only available refuge station properly equipped for the treatment of infected vessels. Since this Conference was held at the instance of the Louisiana State Board of Health, the Governor has issued a proclamation declaring obligatory quarantine of forty days for all vessels from infected or supposed infected ports. The question naturally arises, where are these vessels to be held in quarantine? At the present Mississippi river quarantine station? Long years of experiment have proven this to be an unsafe place for infected vessels and their cargoes to be disinfected. Assuming, of course, that the authorities in charge of this station did their duty, yellow fever has repeatedly passed through this station, or, at least, gotten to New Orleans; whether through this, the Rigolets, Atchafalaya, or some other route, it is immaterial—the authorities were equally responsible. It is also immaterial to us whether the fault is with one or all the quarantine stations or with the administration. The fact exists that yellow fever infection has been repeatedly allowed to get into the city, and whenever it is, we are in danger. Without, I trust, being considered inquisitorial, I will state, in this connection, that some enlightened bodies of Louisiana are apparently dissatisfied with the present methods of administration of their sanitary laws, and the following quotations, while throwing some light on the subject, are not calculated to inspire confidence in other communities outside of the State interested in these affairs. A "petition in behalf of State medicine, to the General Assembly of the State of Louisiana, by the Louisiana State Medical Society, Orleans Parish Medical Society, New Orleans Medical and Surgical Association," reprint from the *New Orleans Medical and Surgical Journal* (June, 1883,) "to give timely information of what is desired shall be accomplished by the present Legislature," is here submitted:

"*State Board of Health.*—Article No. 178, of the Con-

stitution, especially commands that 'the General Assembly shall provide for the establishment and maintenance of a State Board of Health.'

"Although there is a Board of Health of the State of Louisiana in name, still, in fact, the General Assembly has never yet established, much less maintained, a veritable State Board of Health. The following facts render this obvious. March 15, 1855, the law organizing the present Board was enacted; its purpose was especially to establish quarantine for New Orleans. This Board was composed of nine members, six to be appointed by the Governor and to be confirmed by the Senate, and three to be elected by the New Orleans City Council; and although the jurisdiction of the Board was *limited* to New Orleans itself and to the three quarantine stations which command its maritime approaches, yet said Board was entitled "The Board of Health of the State of Louisiana." From 1855 to 1883 fifteen additional laws have been enacted in reference to this Board; however, all of these laws, with two exceptions especially to be referred to, have mainly increased the power and efficiency of the Board as a quarantine and municipal Board of Health for New Orleans *alone*, without extending its jurisdiction. Successive Governors and Senates, from 1855 to the present day, have shown their appreciation of the fact that this Board was a municipal and not a State Board, by invariably appointing and confirming solely citizens of New Orleans as its members, thus uniting with the City Council to form a board exclusively of such citizens. The General Assembly likewise showed its appreciation of the same fact by Act No. 80, of 1877, which decreased the slight resemblance to a State Board then presented by the present Board, inasmuch as it reduced the appointees of the Governor from six to four members, and increased the appointees of the City Council from three to five, thus giving the city appointees a majority on the Board, which our Governors have continued to form exclu-

sively of citizens of New Orleans. It is a legislative fiction to denominate a Board thus restricted in membership and power to a limited section of this State, the 'Board of Health of the State of Louisiana,' and it is a legislative abuse to confer on a board thus constituted authority over the extensive and numerous population and diversified interest of this great State."

* * * * *

"The facts and views now stated justify the following recommendations: A veritable State Board of Health should be at once established. To this Board should be transferred all the power and authority outside of the Parish of Orleans, which existing laws confer on the present so-called "Board of Health of the State of Louisiana," and to a New Orleans Board of Health, organized exclusively by the city authorities, should be transferred all the power and authority which existing laws permit the present Board of Health to exercise within the limits of the parish of Orleans." * * * * *

"THE RESIDENT PHYSICIAN OF THE MISSISSIPPI RIVER
QUARANTINE STATION AND HIS SALARY.

"*Misplaced* responsibility, as well as divided responsibility, is most objectionable. A striking instance of misplaced responsibility occurs in the first sentence, sections 3,042 and 3,039, pages 592 and 593, Revised Statutes 1870, wherein the law directs that the resident physician of the Mississippi river quarantine station *shall be appointed by the Governor*; that his salary shall be \$5,000 per annum, and that he shall be authorized to employ an assistant at \$2,000 per annum. It is urged that public opinion and also the fundamental principle on which depends the existence of a board of health, unite in fixing on the Board of Health rather than the Governor, the responsibility for the administration of the Mississippi river quarantine station; and therefore, that the law should be so amended, that the Board of Health should have the same power to appoint,

fix the salary of, and control the officers and employes at this station, that the Board has in respect to all other sanitary officers and employes, whether these be located in New Orleans or at the quarantine stations other than the one at the Mississippi river, (see section 3041, page 593, Revised Statutes, 1870.) It is deemed important that, if the present laws should be so amended as to confer on the Board of Health the power to appoint the resident physician of the Mississippi river quarantine station, and also his assistant, the amended law should not fail to confer on the Board at the same time the power to fix their salaries—for, if this were neglected, there is reason to fear that the appointment even of the members of the Board would be politically so managed as to be dependent on and subordinate to their pledges in behalf of some favored candidate for the office of resident physician of the Mississippi river quarantine station—an office which now has a salary of \$5,000, now confers another salary of \$2,000, and now distributes other patronage, so that this office rivals, in respect to patronage, that Board to which it should be entirely subordinate.”

From the above it appears the responsibility of the administration of this quarantine station (and by inference the same is applicable to Rigolets and Atchafalaya stations) is not on the Louisiana State Board of Health but on the Governor. This Board, which is singularly organized for a State Board, is simply advisory, at least as far as quarantine administration is concerned, the feature of their public health service that we are mostly interested in. Since the publication of this petition, which was prepared for the Legislature now in session at Baton Rouge, there has been a change in the *personnel* of the Board, which seems to have the confidence of the community, with the active support and co-operation of the Auxiliary Sanitary Association, a voluntary and patriotic body of influential citizens, organized for the purpose of promoting the local sanitation

of New Orleans. But the inference admissible from the extract above quoted from Dr. Holt's address before the Conference is, there will be no more material change in the policy of the Board. "Reorganizing in the opening of an active campaign, it can follow no other course, however convinced of the possibility of improvement." Since the adjournment of the Conference, the Governor of Louisiana, at the instance of the Board of Health, by resolution passed June 9, has issued a proclamation, to take effect July 10, declaring a forty days' detention of all vessels from a number of Mexican, Central American and West India Island ports (see *Picayune* June 13.) The *New Orleans States* of June 12, has an interesting editorial on this proclamation under the caption of "Quarantine and Commerce." A few extracts and some brief comment is pertinent to this report:

"It is now a settled fact that New Orleans must either abandon all purpose or hope of occupying her best and true field of commercial enterprise or adopt a quarantine system that will insure her the greatest measure of protection from yellow fever, and at the same time keep her port open to ships engaged in the Mexican, West Indian and South American trade. The solution of this problem is not less important to the commercial growth of this city than is the success of the jetties in opening a deep passage to the sea. Indeed, we may truthfully say that the jetties are an effective quarantine that dispenses with 'detention'—are an essential part of a great system that can and can alone make New Orleans one of the great commercial centers of the world. Of what worth were great ships and rich neighbors to us until a passage from our wharves to the ocean was opened? And of what worth is that passage and ships and neighbors, rich even with the wealth of Ormus and Ind, if to protect ourselves from pestilence we must close our ports for a great part of the year against them?"

"The Governor, on the recommendation of the Board of Health, has just issued a proclamation requiring the detention of vessels from certain ports, forty days in quarantine. Detention for forty days at quarantine is equivalent to non-intercourse. It was intended to be non-intercourse, and for the balance of the present season it destroys our trade with the numerous ports catalogued in the proclamation, and there are a number of other ports

which will be placed in the proscribed list the moment yellow fever is suspected to prevail in them. The value, even, of the much laughed at banana trade with these latter ports will be seen, by reference to a table in another column, headed 'Our Fruit Trade,' by which it is shown that in six years that trade has increased from \$133,142 in 1878, to \$920,170 in 1883. And we may further state that during the first three months of the present year this trade was nearly double what it was for the corresponding months of 1883. This fruit trade, but an insignificant part of our possible trade with the South, but large and valuable in itself, and rapidly growing, thus hangs by a thread. A dispatch from any one of these ports from which it comes, that a case of yellow fever has appeared there, and under our present quarantine system that trade will be instantly destroyed. But this is a mere drop in the bucket. The present system of quarantine must finally and speedily destroy, not only the much-ridiculed fruit trade, not only all other lines of trade now existing between this city and the Southern nations, but also that vast and magnificent commerce which at no distant day must sweep over the Spanish main and the Gulf of Mexico, and from the East over the Pacific and across the Isthmus, and to which New Orleans must look for her future wealth and commercial greatness."

The article goes on to commend the plan of quarantine proposed by Dr. Holt in his address, as a proper solution of this question, a plan which was unanimously and enthusiastically endorsed by the Conference. But it must be remembered this is an ideal quarantine, and recalls to mind a similar argument advanced by his predecessor in office, Dr. Joseph Jones, than whom New Orleans never had a more faithful or loyal officer. Dr. Jones held a Quarantine Conference at New Orleans in December, 1880, called by the Louisiana State Board of Health, to which all Boards of Health interested were invited, and which was largely attended. He had previously published in the *New Orleans Medical and Surgical Journal*, February, 1879, his views of what their quarantine should be. He seemed to understand thoroughly the situation, and nobody, to my knowledge, ever questioned his energy or capacity. One brief extract may suffice to illustrate his estimate of the quarantine when he assumed charge of the health service of

Louisiana: "An imperfect quarantine, such as now exists at the outlet of the Mississippi river, has been a sham and a delusion." Is it any better now? The result of this Conference and four years of laborious service by Dr. Jones and his co-laborers failed to materially change the policy of the State government in dealing with this question, or to establish that confidence which we all wish to feel, based upon known efficiency. To do justice to the Louisiana State Board of Health, I will venture the assertion, without referring to statistics or consulting official records, that less yellow fever got into New Orleans during the past four summers than ever before in the same length of time, and what did get in was more promptly detected and successfully dealt with; but it must be noted that New Orleans was never before in its history as thoroughly watched by health organizations outside of the State. It was kept under constant surveillance during periods of danger, which gave rise to no little acrimonious feeling and expression. I trust I give no offense in stating that this pressure from a feeling of distrust, for which there was just cause, was a potent factor in bringing about the alliance between the Louisiana State Board of Health and the United States Marine Hospital Service, last summer, an alliance which apparently worked satisfactorily. I am pleased to note the following assertion (page (d) introduction) from the last official report of the Louisiana State Board of Health, by Dr. Joseph Jones, President, etc.; and that four years of official observation enables him to state positively that yellow fever is never endemic to this country; it is exotic and can be kept away by quarantine. His views on this subject, published in the *New Orleans Medical and Surgical Journal*, for March, 1879 (page 678), were ambiguous. These views are in accord with my own, and as they are germane to this report and from such high authority, I quote:

- "1 Yellow fever is not indigenous to New Orleans
2. Yellow fever is not indigenous to Louisiana.
- 3 Yellow fever is not indigenous to the Mississippi Valley.

4. Yellow fever can be excluded from New Orleans and the Mississippi Valley by a rigid and effective quarantine.

5. Quarantine, to be effective, must embrace not only inspection and detention, but discharge of infected cargoes, through ventilation and fumigation.

6. The citizens of Louisiana should demand that the members of the Board of Health appointed by the Governor and Common Council of New Orleans, should be men competent to devise and execute the measures necessary to the exclusion of foreign pestilence from the waters of Louisiana."

And the Doctor should have added that Louisiana should place at the command of its Board of Health adequate means to perform duties expected of it. While we may indulge the hope that Dr. Holt may be more successful than his predecessor in inducing his government to adopt his suggestions, we have as yet no reason to think he will; at least there was no such guarantee given at the Conference, and while we may admire his enthusiasm, his perfect honesty and the beauty of his rhetoric, and pledge ourselves to give him a fair trial *when he gets his proposed quarantine*, which is now theoretical and prospective, for the present he will please pardon our incredulity, bear with our skepticism, and, we trust, not consider us eccentric. The editorial from the *States*, above quoted, concludes as follows:

"The plan of Dr. Holt means the abolition of the ancient, ignorant and barbarous system of detention which threatens the ruin of New Orleans. The detention of an unclean vessel at quarantine for a certain number of days cannot improve her condition; on the contrary, the longer she is detained the filthier and more dangerous she becomes; hence, outside of Dr. Holt's proposition, there is no safety except in non-intercourse. Now, the question is, Are we to apply Dr. Holt's system? It will require the insignificant sum of \$25,000 to obtain the apparatus and put it into operation. The Federal Government appropriated \$5,000,000 to remove the bar at the mouth of the Mississippi and open this port to the world; shall not the Louisiana Legislature appropriate \$25,000 to make the work wrought by that \$5,000,000 effective and remove a quarantine system which is as great an obstructive to our trade as was the bar that Eads removed. Whether this shall be done or not rests with the merchants of New Orleans. If our commercial

organizations shall move together, lay this subject before the Legislature and demand in behalf of the interests of this city and of the Mississippi Valley such an appropriation, we have not a doubt that it can be obtained, and Dr. Holt's system put in operation by next spring. That once done, 'detention' will be in the future abandoned; our port will be open throughout the year to vessels from all parts of the world; and no future Board of Health will ever venture to return to a system of quarantine which, if it protects the health of the people, destroys the existence of the city."

This Conference proposed to discuss measures for immediate application this summer, to give the greatest amount of confidence possible, compatible with safety to communities in our own country having commercial relations with New Orleans and other Southern ports, with the minimum amount of interference to foreign commerce. The resolution in regard to the Marine Hospital Service presented to my mind the most available methods to reach this end. This was not proposed as a permanent arrangement, but for the next four months. This question is apparently as far from settlement now as it was four years ago, and is liable to be an annually recurring one. Therefore, there are two points I wish to briefly allude to. One, the preservation of the public health *vs.* commercial interest; the other, State sovereignty *vs.* Federal interference. If I remember correctly (I have not the proceedings now to refer to), in the Quarantine Conference of 1880, above alluded to, the great objection to Ship Island as a refuge station for infected ships by the advocates of the present system was that its adoption would result in the destruction of the commerce of New Orleans. The fact that Ship Island was relied upon last summer as a leading factor in the quarantine policy of the Gulf coast, proved this apprehension to be fallacious. The inspection service of the National Board of Health invoked by the Tennessee and Mississippi State Boards of Health in 1880, 1881, 1882, was regarded by the Louisiana State Board of Health as an unwarrantable surveillance, though States were guaranteed the same

privileges of placing inspectors in New Orleans if they wished to exercise it individually.

The action of the Louisiana State Board of Health in making an alliance with the Marine Hospital Service last summer, as shown by reference to the proceedings of this Board, April 14, 1883 (published report, page 89), indicates that it was a preference as to the arm of the Federal service and not the principle of Federal intervention objected to. This principle of non-intervention is clearly expressed by President Holt, if the newspaper reports (*Times-Democrat* and *Picayune*, of June 4th), herewith submitted, are correct. The *Times-Democrat* says: "We do not propose to bother ourselves about either the National Board of Health or the Marine Hospital Service." The *Picayune* has the following: "Dr. Holt, of Louisiana, said he welcomed the presentation of the question. It had been looked upon as a bugbear by some, but he wanted to have the matter disposed of for good. He would say for the Louisiana Board of Health that, while it is willing to co-operate and be on friendly terms with other health organizations, it would maintain the sovereignty of Louisiana wherever that was affected. His Board cared for no outside organization, and asked no favors. His Board would vote squarely against putting the National Board into any place of authority or power."

The final settlement of this question is an important one, and it is fair to assume that this is a finale of it, as far as the present Louisiana State Board of Health is concerned. The question now arises, whether Louisiana will carry out the suggestions made in Dr. Holt's address, or treat them as it did those of his predecessor in office, Dr. Jones. *Nous verrons*. Federal intervention to protect the Mississippi Valley country from the ravages of yellow fever does not interfere with State sovereignty any more than it does to open the mouth of the Mississippi river to benefit the commerce of the country. And if Louisiana, either from

want of ability or proper appreciation of the obligations resting upon her by virtue of her geographical position and commercial importance to the country above her, does not do it, Federal power will be invoked by other States directly interested in this question, and which may not be so punctilious about her sovereignty.

This report is longer than I desired or intended it should be; but the whole subject is a complex one, and, as you are aware, has been an exceedingly vexed one for the past four years. The points involved in it may arise any summer, and while we hope there may never again arise a necessity for an inter-State quarantine or an interference with commercial intercourse between the States, we should understand each other in the event the necessity should arise.

A REPORT
ON THE
Conferences of State Boards of Health

HELD IN
ST. LOUIS, OCTOBER 13TH AND 14TH, AND IN WASHINGTON,
DECEMBER 10TH AND 11TH, 1884.

BY
G. B. THORNTON, M. D.,
OF MEMPHIS, TENNESSEE.

MEMBER OF THE STATE BOARD OF HEALTH, AND ONE OF
ITS DELEGATES TO SAID CONFERENCES.

CONFERENCES OF STATE BOARDS OF HEALTH.

Being appointed a delegate, with your Secretary, Dr. J. Berrien Lindsley, to the Conference of the State Boards of Health held in St. Louis Mo., October 13-15, during the meeting of the Public Health Association in that city, October 14-17, I have the honor to report that the Conference was called to order by its President, Hon. Erastus Brooks, October 13.

The following States were represented: Arkansas, Connecticut, Illinois, Louisiana, Massachusetts, Michigan, Minnesota, Maryland, New Hampshire, New Jersey, New York, Rhode Island, South Carolina, Tennessee, Texas, West Virginia and Ontario, Canada; nineteen, including Canada.

Besides the delegates from these States, a number of representatives from Local Boards of Health of cities were present and participated in the discussions.

A committee was appointed to draught a plan for permanent organization, which was to report at next annual meeting.

The remainder of the session of this day was consumed in discussion of the prevention of the introduction into, and spread of, cholera in this country. An interesting paper was read on this subject by Dr. J. H. Rauch, Secretary Illinois State Board of Health.

Dr. Chas. Smart, Surgeon U. S. A., and member of National Board of Health, upon special invitation, made a report detailing the methods recommended by the National Board of Health for disinfection and quarantine. Also, on the best methods for preventing the introduction of cholera into this country, and for the restriction and prevention of

its spread from one locality to another. Both of these papers have been published with the proceedings of the Conference, and are in possession of your Secretary for the use of the Board, if desired.

After the discussion of these two papers, the Conference adjourned to meet on Wednesday, the 15th.

The whole of this session was consumed in verbal reports from the members on their organization and methods of work, and the special steps taken for the prevention and spread of cholera. The Conference adjourned to meet in Washington, December 10.

All the States represented at the St. Louis Conference were represented at this meeting, with the exception of Arkansas and Texas. Delegates were present from North Carolina and Georgia, which were not represented at the St. Louis meeting. In addition to those from State Boards there were a number from Local Boards, the principal Eastern cities being represented, and several members from the Army and Navy Medical Corps were present.

This Conference I regarded as the most important one yet held, inasmuch as the question of the importation of cholera and the reorganization of the National Board of Health, was brought directly before the Congressional Committee on Public Health. The first business of importance done by the Conference was the appointment of three committees: one on Federal Legislation, which considered maritime quarantine, and of which Dr. Walcott, of Massachusetts, was Chairman; one on Inter-State Relations, of which Dr. Ezra M. Hunt, of New Jersey, was Chairman; and one on Municipal Action, of which Dr. Raymond, of Brooklyn, New York, was Chairman. To these three committees was referred all business which came under their special jurisdiction.

The first committee, the one on Federal Legislation, was the most important, and the one the Conference and the public generally were most interested in, as the question of

Maritime Quarantine, always an important one, but especially so just now, and the framing of a bill to be submitted to Congress looking to the reorganization of the National Board of Health, or the formation of another National Health organization, was its main work. The committee was, Dr. Walcott, of Massachusetts, Chairman; Drs. Rauch, of Illinois, Baker, of Michigan, Smith, of New York, and Herrick, of Louisiana; to which were added the President, Hon Erastus Brooks, of New York, and Dr. McCormack, Secretary, of Kentucky.

The Conference then adjourned, and at 2 o'clock, P. M., attended a reception at the White House upon invitation of President Arthur, who, with his Secretary of State, Mr. Frelinghuysen, gave it audience. The President, in a brief speech, expressed himself in sympathy with the objects of the Conference as far as the prevention of the introduction of infectious diseases into this country was concerned, and stated what steps had been taken by the Government to prevent the introduction of cholera through the lines of commerce, and that the Secretaries of State and the Treasury would be pleased to give audience to a committee from the Conference and hear from it specifically what plans or propositions it might have to submit, and give it such information on the subject as they might have, etc. The balance of the evening was devoted to committee work.

At 10 A. M. the following day the Conference reassembled, and after listening to verbal reports from the members on their respective organization, work, etc., received the reports of the three committees appointed at the first day's session. The report on Federal Legislation elicited some discussion, and under the following resolution, offered by Dr. Chancellor, of Maryland, was referred back to the committee for further consideration, and to submit the bill to the committee of the House without further reference to the Conference, as it would adjourn that evening.

Resolved, "That so much of the report on Federal Legislation be referred back to the committee, and that the committee be increased by five, and the committee be directed to urge on Congress a bill providing for the organization of a Health Department of the United States.

The five additional members were as follows: Drs. J. C. Hearne, Missouri; T. F. Wood, North Carolina; C. W. Chancellor, Maryland; E. S. Elder, Indiana, and G. B. Thornton, Tennessee.

The original bill, as prepared by the committee, was submitted to Senator Harris, of Tennessee, who declined to consider it, as it was an original Act, and not an amendatory one of the Act entitled "An Act to prevent the introduction of contagious and infectious diseases into the United States, and to establish a National Board of Health; approved March 3, 1879," etc.; he being of the opinion that none but an amendatory Act would become a law. The committee as enlarged met that evening, and after considerable discussion adopted the accompanying bill which I submit as a part of this report.

This bill was submitted to the committee of the House the following day. It is but just to myself in this connection to state that this bill did not meet with my approval, and as there was no opportunity to offer a minority report or to discuss the subject before the Conference, I will submit my views in this report on reorganization of the National Board of Health, if it must be reorganized.

Before going into the Conference, Dr. J. Berrien Lindsay, my colleague, and myself discussed this subject and agreed upon what seemed to us the most feasible solution of the question of National Board reorganization.

It was as follows: That there be appointed, as in the present Board, one member from the Army Medical Corps, one from the Naval Medical Corps, one from the Marine Hospital Service, one from the Department of Justice, and one from civil life, who should be President and the executive officer of the Board; these members to reside in Washing-

ton, and to constitute an Executive Committee. This Board could be enlarged in order to provide for State representation, by each State Board of Health now in existence, or hereafter to be formed, nominating a member through its Governor, to be appointed by the President as other members, and entitled to all the privileges of membership as regards voting and participating in its discussions, but this State representative to be paid by his respective State; that membership to be voluntary; should a State decline such representation, it does so at its own option; this Board to elect its Secretary, whose duties are to be merely clerical, and not to be those of an executive officer; the salary of the President and Secretary to be determined by the creating act.

This plan was submitted by us to the Hon. Isham G. Harris, U. S. Senate, and Hon. Casey Young, of the House, two gentlemen who had taken a leading part in the formation and support of the present National Board of Health. They both considered this plan favorably, and expressed the opinion that such a bill as this might be carried through both houses of Congress.

Without wishing to lengthen this report beyond proper limits, I will offer what occurs to me to be the chief objectionable features to the bill submitted by the Conference Committee to the Congressional Committee on Public Health, a copy of which I now present to you.

The first section provides that "there shall be established a National Board of Health, to consist of one member from each State Board of Health now established, or which may be hereafter established, in the United States, to be appointed by the President and confirmed by the Senate, whose compensation, when actually engaged in the performance of duty under this Act, shall be ten dollars per diem and reasonable expenses," etc. The Board to meet in Washington annually, and such other times as it might be convened in extra session, on call of its President and Secretary, etc.

This would involve a very large expense by Congress, and one that I thought would not be acceptable. It also provides "that the officers of the Board shall be a Chairman and Secretary. The Secretary shall be the executive officer and *ex-officio* a member of the Board, and shall devote his entire time to the duties of the office, and may be removed for cause at any regular meeting of the Board, two-thirds of the full Board voting therefor, and shall receive such salary as may be determined by the Board. The Chairman, with six other members representing the various geographical divisions of the country, shall constitute the Executive Committee of the Board, to be elected at the first meeting of the Board and at each annual meeting thereafter, and said committee shall, and is hereby authorized to, exercise such powers as may from time to time be conferred upon it by the Board."

From this it appears that extraordinary powers are conferred or may be exercised by the Secretary. This Executive Committee, residing such a distance from Washington, "representing the various geographical divisions of the country," would not be convenient for consultation in cases of emergency. The Executive Officer would be practically the Executive Committee.

The plan suggested by Dr. Lindsley and myself has met with very little favor, so far as I know, among sanitarians; all seem to want a National health organization, but there is great diversity of opinion as to the character and composition of that organization. The chief objection I hear against the plan we propose is, that the dissensions and jealousies engendered in the present National Board by the members from those official bodies were elements of weakness to it, and the same feelings may arise again from this source in the proposed reorganized Board, therefore it is thought best to exclude them altogether.

Another objection offered is that the Army, Navy and Marine Hospital Service do not represent any section of

the country, and should not be diverted from their legitimate sphere of duty. I cannot see just grounds for these objections.

Some dissensions may have arisen among the members of the present Board, but the same may be said of any similar body, and such causes for dissension may never arise again. Individual aspirations and the fancied infringement of *the* or *a* National health organization upon the assumed official prerogatives of a department, may have, and doubtless has had, an influence in arousing hostility to such an organization; but such antagonisms can and should be reconciled, peaceably if it can be done, but forcibly if it must.

So far from the three named official bodies not representing any section of the country, I regard as no argument, but merely captious opposition; for, on the contrary, they being National organizations, represent alike all sections.

One point more and I will close. It is suggested that a single Health Commissioner, a kind of Cabinet officer, would solve the vexed question; but this is such a radical departure from the original act creating the National Board of Health that it would be no reorganization, but an obliteration of the whole present plan, and the substitution in lieu thereof another new and untried experiment.

For the sake of the promotion of sanitary science and the public health interest throughout the whole country—and none needs it more than the Mississippi Valley, in which we are directly interested—it is hoped that some efficient plan of National health organization may be adopted by the present Congress.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

REPORTS
OF
Local and County Boards,
MADE TO THE
STATE BOARD OF HEALTH.

REPORTS OF LOCAL AND COUNTY BOARDS.

KNOXVILLE.

J. B. LINDSLEY, M. D., *Secretary State Board of Health.*

DEAR SIR:—Knoxville is situated in the midst of one of the most fertile valleys in Tennessee, and is rapidly growing to be a city of no mean proportions. We have a population of 25,000, and last year (1884), we had in the city 458 deaths, giving us a death rate of 17.92 per 1000 per annum. The highest death rate that we have had for the past nine years was 18.89 per 1000 per annum, in 1882. We have not had an epidemic of any kind for more than a dozen years, except in the winter of 1883-84, we had 76 cases of small-pox. In 1873 we had 30 cases of cholera, and in 1878 we had three or four cases of yellow fever, brought here from Memphis and Chattanooga. Last year we had 12 cases of scarlet fever and 8 cases of diphtheria, and only one death from either cause. With these facts one can form some estimate of our place as a health resort, and any year the influx of people from all directions seeking health, has advertised our section of the State, and especially our city, as one of the best of health resorts.

Table showing variations of temperature, mean relative humidity and local annual rainfall for four years, from 1881 to 1884, inclusive.

| Year. | Annual mean temperature. | Highest temperature during year | Lowest temperature during year | No. of days maximum temperature above 90° | No. of days minimum temperature below 32° | Annual mean relative humidity. | Total annual rainfall, inches. | No. of days during year on which rain or snow fell. |
|-------|--------------------------|---------------------------------|--------------------------------|---|---|--------------------------------|--------------------------------|---|
| 1881 | 58.6 | 100 | 9.0 | 45 | 62 | 70.4 | 46.67 | 140 |
| 1882 | 58.2 | 91.4 | 5.0 | 23 | 58 | 74.4 | 66.36 | 157 |
| 1883 | 57.9 | 96 | 1.5 | 17 | 64 | 71.9 | 52.67 | 138 |
| 1884 | 57.6 | 94 | -1.6 | 29 | 53 | 72.7 | 62.53 | 143 |

Annual mean temperature for the last eleven years equals 57.7.

Highest temperature during the same period was 100°.

Lowest temperature during the same period, 16.

Average relative humidity for same period, 72.1.

Mean annual rainfall, 53.61.

Our death rate from consumption in natives is very small. Most of our cases come from a distance and come for health: while quite a large number are very much benefitted, yet some die, and of course our city has to count them in her death rate. We have decidedly the healthiest city in the South, and our gates are always open to strangers, whether they be from north or south, east or west. About two-fifths of our population are from the north, and are so much pleased with our healthy condition that they continually sing our praises to all who will hear. Any information that I can supply to strangers will be gladly given.

S. B. BOYD, M. D.,
Secretary Board of Health, Knoxville.

CHATTANOOGA.

J. B. LINDSLEY, M. D. *Secretary State Board of Health:*

DEAR SIR:—I have received your postal of the 13th. I am very sorry indeed that our local health authorities here have finally excused themselves from the duty of furnishing a mortuary and sanitary report for our coming volume. Since the receipt of your card I have taken a few unused moments to look through the untabulated records in the office of the Registrar of Vital Statistics. No birth record is kept.

From the death record I have hastily formulated the crude mortuary report herewith enclosed.

A want of time at this late hour prevents entirely my making any comments, either on the report or on the sanitary condition of the town.

You know my theory is to infer the condition from the results, and I know no reason why Chattanooga should be exempt from the application of this rule.

Respectfully, your obedient servant,

P. D. SIMS.

*Mortality report from all causes, in the City of Chattanooga,
classified according to sex and color, for the years 1883
and 1884.*

| DISEASE. | 1883. | | | | | 1884. | | | | |
|-------------------------------------|------------|------------|--------------|--------------|-------|------------|------------|--------------|--------------|--------|
| | White (M.) | White (F.) | Colored (M.) | Colored (F.) | Total | White (M.) | White (F.) | Colored (M.) | Colored (F.) | Total. |
| Consumption | 13 | 26 | 27 | 30 | 96 | 12 | 23 | 28 | 26 | 83 |
| Worms | | | 1 | | 1 | | | 1 | | 1 |
| Dropsy | 4 | 4 | 3 | 9 | 20 | 1 | 2 | 7 | 8 | 18 |
| Pneumonia | 13 | | 7 | 6 | 31 | 6 | 10 | 15 | 14 | 45 |
| Epilepsy | 1 | | 1 | | 2 | | | | 1 | 1 |
| Unknown | 2 | 5 | 6 | 8 | 21 | 9 | 5 | 11 | 7 | 32 |
| Hepatic abscess | | | | | | 2 | | | | 2 |
| Pleuritis | 1 | | | | 1 | | | | | |
| Nephritis | | | 1 | | 1 | | | 1 | | 1 |
| Spasms | 1 | 1 | 2 | 3 | 7 | 3 | 3 | 2 | 4 | 12 |
| Murder | 1 | | | | 1 | | | | | |
| Arterial degeneration | | 1 | | | 1 | | | | | |
| Burns | | 1 | | 2 | 3 | 1 | 1 | | 3 | 5 |
| Tetanus | 1 | | 1 | 1 | 4 | 3 | | 3 | | 7 |
| Small pox | 18 | 28 | 40 | 19 | 105 | | | | | |
| Enteritis | 1 | 3 | 2 | 2 | 8 | 6 | 8 | 4 | 3 | 21 |
| Hydrocephalus | 2 | | | | 2 | | 1 | 1 | | 2 |
| Old age | 2 | 2 | 2 | 5 | 11 | 4 | 4 | | 3 | 11 |
| Erysipelas | | | | | | 2 | 1 | 1 | 1 | 5 |
| Cancer | 1 | 1 | | 1 | 3 | | 2 | | | 2 |
| Paralysis | 1 | 1 | 1 | 3 | 6 | 1 | 1 | 1 | 1 | 4 |
| Cholera infantum | 4 | 5 | 8 | 5 | 22 | | 3 | 3 | 7 | 17 |
| Croup | | 1 | 2 | | 3 | 4 | | 2 | 3 | 9 |
| Cerebellar tumor | | | | | | | 1 | | | 1 |
| Marasmus | 3 | 3 | 5 | 7 | 18 | 2 | 4 | 6 | 3 | 15 |
| Inhuman treatment and neglect | | | | | | | 2 | 1 | 1 | 4 |
| Scrofula | | 1 | | 1 | 2 | | 3 | 3 | 2 | 8 |
| Accidents | | | 1 | | 1 | 4 | | | | 4 |
| Chronic diarrhoea | 1 | 1 | | 1 | 3 | 1 | 2 | 1 | 4 | 8 |
| Congestion of brain | 5 | 1 | 3 | | 9 | 1 | 1 | | | 2 |
| Railroad accident | 2 | | 4 | | 6 | 8 | | 4 | | 12 |
| Typhoid fever | 5 | 3 | 2 | 3 | 13 | 2 | 5 | 3 | 2 | 12 |
| Intemperance | | | | | 1 | 1 | | | | 1 |
| Intestinal obstruction | | | | | | | 1 | | | 1 |
| Poison | | | | 1 | 1 | | 1 | | | 1 |
| Gastritis | | | | | | 1 | | 1 | 2 | 4 |
| Gastric ulcer | 2 | 1 | | | 3 | | | | | |
| Aphthous ulcer | | | | | | 1 | | | 1 | 2 |
| Purpural septicemia | | | | 1 | 1 | | | | | |
| Syphilis | | | | 1 | 1 | 1 | 1 | 1 | | 3 |
| Congenital syphilis | | | | | | 1 | | | | 1 |
| Embolism | | | | | | | 1 | | | 1 |
| Drinking coal oil | | | | 1 | 1 | | | | | |
| Bilious fever | 3 | 1 | | 6 | 10 | 3 | 1 | 3 | 3 | 10 |

*Mortality report of Chattanooga for the years 1883 and
1884.—Continued.*

| DISEASE. | 1883. | | | | | 1884. | | | | |
|------------------------------------|------------|------------|--------------|--------------|--------|------------|------------|--------------|--------------|--------|
| | White (M.) | White (F.) | Colored (M.) | Colored (F.) | Total. | White (M.) | White (F.) | Colored (M.) | Colored (F.) | Total. |
| Uremia..... | | | | | | | | | 1 | 1 |
| Rachitis..... | | 1 | | | 1 | | | | | |
| Diphtheria..... | 5 | 2 | | 3 | 10 | | | | 1 | 1 |
| Splinitis..... | | | | | | | 1 | | | 1 |
| Asthma..... | | | | 1 | 1 | | | | | |
| Pylophlebitis..... | | | | | | | | | 1 | 1 |
| Adenitis..... | | | | 1 | 1 | | | | | |
| Whooping cough..... | 1 | 2 | | 1 | 4 | 1 | 1 | 3 | | 5 |
| Intussusception..... | | | 1 | | 1 | | | | | |
| Umbilical hemorrhage..... | | | | | | | 1 | 1 | 1 | 3 |
| Inanition..... | | 1 | | | 1 | 2 | 2 | 1 | 2 | 7 |
| Infanticide..... | | | | | | 1 | | | | 1 |
| Sloughing ulcer..... | | 1 | | | 1 | | | | | |
| Sclerosis of brain..... | | 1 | | | 1 | | | | | |
| Softening of brain..... | 1 | 1 | | | 2 | 3 | | | | 3 |
| Abscess of lungs..... | | 1 | | | 1 | | | | | |
| Hemorrhage of lungs..... | | | | | | | 2 | 1 | 3 | 6 |
| Rupture of pulmonary arteries..... | | | | 1 | 1 | | | | | |
| Asphyxia..... | | | | | | 3 | 1 | 1 | 1 | 6 |
| Hemorrhage..... | | | 1 | | 1 | | | | | |
| Urticaria..... | | | | | | 1 | | | | 1 |
| Hydrothorax..... | | | | 1 | 1 | | | | | |
| Deformity..... | | | | | | | | 1 | | 1 |
| Metritis..... | | 1 | | | 1 | | | | | |
| Necrosis of jaw..... | | | | | | | | 1 | | 1 |
| Hepatitis..... | 1 | | 1 | | 2 | | | | | |
| Tonsillitis..... | | | | | | 1 | | | | 1 |
| Albumenuria..... | | | | | | | 1 | | | 1 |
| Congestive chill..... | | 1 | | | 1 | | 1 | | | 1 |
| Ovariectomy..... | | 1 | | | 1 | | | | | |
| Broken leg..... | | | 1 | | 1 | | | | | |
| Septicemia..... | 1 | | | | 1 | 1 | | | 2 | 3 |
| Rheumatism..... | 1 | | 1 | | 2 | | | 1 | 1 | 2 |
| Meningitis..... | 2 | 5 | 1 | 3 | 11 | 5 | 3 | 1 | | 9 |
| Suicide..... | 1 | | | | 1 | | | | 1 | 1 |
| Heart disease..... | 1 | 3 | | 1 | 5 | 5 | 4 | 6 | 5 | 20 |
| Colic..... | 1 | | | | 1 | | | | | |
| Measles..... | 3 | | 1 | | 4 | 1 | 3 | 3 | 2 | 9 |
| Pyemia..... | 1 | | | | 1 | 1 | | | | 1 |
| Gunshot..... | 1 | | 3 | | 4 | 1 | | 2 | | 3 |
| Angina pectoris..... | | 1 | | | 1 | | | | | |
| Strangulated hernia..... | | 1 | | | 1 | | | | | |
| Bronchitis..... | 2 | 1 | 3 | 1 | 7 | 1 | 1 | | | 2 |
| Cystitis..... | | | 1 | | 1 | | | | | |

*Mortality report of Chattanooga for the years 1883 and
1884—Continued.*

| DISEASE. | 1883. | | | | | 1884. | | | | |
|-------------------------------------|------------|------------|--------------|--------------|--------|-------------------------------------|------------|--------------|--------------|--------|
| | White (M.) | White (F.) | Colored (M.) | Colored (F.) | Total. | White (M.) | White (F.) | Colored (M.) | Colored (F.) | Total. |
| Spinal disease..... | | | | | | 1 | | | | 1 |
| Hung for murder..... | 1 | | | | 1 | | | | | |
| Dentition..... | 1 | 1 | 2 | 1 | 5 | 2 | 3 | 1 | 2 | 8 |
| Congestion of lungs..... | 1 | 4 | | | 5 | 2 | 3 | 2 | 1 | 8 |
| Typho-malarial fever..... | 1 | 1 | 2 | 1 | 5 | | 2 | 1 | 1 | 4 |
| Diarrhea..... | 2 | 2 | 2 | 3 | 9 | 2 | 3 | 3 | 2 | 11 |
| Opium poison..... | 1 | | | | 1 | | | | | |
| Congestion..... | 3 | 1 | | 2 | 6 | 3 | 2 | | | 5 |
| Puerperal fever..... | | | | | | | | | 1 | 1 |
| Parturition..... | | 1 | | 1 | 2 | | 1 | | | 1 |
| Puerperal convulsions..... | | | | | | | 2 | | 1 | 3 |
| Ovarian cyst..... | | 1 | | | 1 | | 1 | | | 1 |
| Apoplexia..... | | | 1 | | 1 | | | | 1 | 1 |
| Gangrene..... | | | 1 | | 1 | | | | | |
| Dysentery..... | 4 | 7 | | | 11 | 7 | 1 | 4 | 1 | 16 |
| Drowning..... | 2 | | 1 | | 3 | | | 2 | | 2 |
| Peritonitis..... | | 2 | 1 | 2 | 5 | | 1 | 1 | 1 | 3 |
| Bright's disease..... | | 1 | 1 | | 1 | 1 | | | | 1 |
| Concussion of brain..... | | | | | | 1 | 2 | | | 3 |
| Inflammation of brain..... | 1 | | 2 | | 3 | 1 | | 2 | 1 | 4 |
| Total..... | 128 | 141 | 145 | 139 | 553 | 131 | 133 | 141 | 127 | 532 |
| Population in 1883 was..... | 20,666 | | | | | Population in 1884 was..... | | | | |
| White..... | 12,992 | | | | | White..... | | | | |
| Colored..... | 7,674 | | | | | Colored..... | | | | |
| Aggregate death rate per 1,000..... | 26.7 | | | | | Aggregate death rate per 1,000..... | | | | |
| White " " "..... | 20.7 | | | | | White " " "..... | | | | |
| Colored " " "..... | 37 | | | | | Colored " " "..... | | | | |

NASHVILLE.

J. B. LINDSLEY, M. D., *Secretary State Board of Health* :

DEAR SIR:—In the matter of contagious and infectious diseases I have but little to report. The last case of small-pox reported to this office was sent to the pest-house July 12, 1884, since which time we have been entirely free from the disease.

In the month of August diphtheria, of a very malignant type, appeared in East Nashville. This Board, with the few facilities at its command, went to work earnestly to mitigate the severity of the disease and to protect those unaffected. The measures adopted were reported to and received the approval of yourself and your Executive Committee. I am pleased to be able to report the gradual extinction of this fearful malady. We have not had a death reported from this cause since December 2, 1884, and only two cases have been reported during the same period.

The following table shows the number of cases and deaths reported from this disease from August 1, 1884, to December 31, 1884:

| Months. | Cases. | Deaths |
|----------------|--------|--------|
| August..... | 24 | 11 |
| September..... | 43 | 9 |
| October..... | 36 | 10 |
| November..... | 23 | 7 |
| December..... | 2 | 1 |
| Total..... | 128 | 38 |

The first cases of which we could obtain any information occurred in a poor colored family, and beyond this all attempts to trace the disease were futile.

Before leaving the subject I desire to express my thanks to your Board for the printed circulars on the "Management and Prevention of Diphtheria," which you kindly furnished for distribution among the afflicted families and neighbors. The apprehension of a visitation next summer makes cholera the all absorbing topic in health circles at this time. This Board sent its executive officer to the Health Conference held in Washington, December 10, 1884, and his report of the proceedings of that body has already been published in our daily papers. We believe that such meetings will be productive of material benefit to the public at large, and shall earnestly strive to have carried into effect the special recommendations of the Conference to municipalities. It is our intention to have every vault abolished that is conveniently near an approved sewer, and wherever there will probably not be a sewer for some

time, to have every surface privy and vault that is not constructed as required by law, substituted by one that is, and the same kept thoroughly disinfected, and to urge upon the authorities the grave necessity of remedying as soon as possible all faulty and dangerous sewers, and the importance of constructing new ones of approved patterns in localities needing them, as rapidly as the money can be procured for this purpose. We have the assurance of the Board of Public Works and Affairs that they will organize and equip a scavenger force sufficiently large to keep the city thoroughly clean, and that the work shall be so efficiently performed as to leave nothing undone that can be reasonably demanded.

Concerning our future water supply, about which so much has been written and said during the past few years, I would say, that the action of the Board of Public Works and Affairs and the City Council, in providing the annual budget for 1885, indicates that the "Island filter project" is to be tried, and if found to work it will furnish our future supply. The opinion of the Board upon the question is too well known to require reiteration.

In attempting to secure the connection of premises with a sewer by the introduction of a water-closet, we are frequently confronted by a serious obstacle in the lack of ready funds upon the part of an otherwise cheerfully willing owner. This Board is of the opinion that it would not only expedite this class of work very materially but that it would also be conducive to the increased health and comfort of our citizens, if the Legislature would enact a law that would confer upon municipal corporations having a population of (say) twenty thousand or more, the power by ordinance to regulate and make these connections, if the owner or owners of any lot or premises fail to comply with the provisions of such ordinances within such time as may be prescribed thereby, and that the expense incurred in so doing shall be a lien upon said premises or lot, and its collection provided for in some such manner as is now done in cases of the construction of pavements and sidewalks by the city when property owners fail to comply with the laws upon that subject. If your Board concurs in the expediency of the measure, we would respectfully request the Board, as the highest authority in the State in sanitary matters, to use its influence in every way possible to procure the passage of such a law.

In compliance with your request I have compiled the mortality statistics of this city for the years 1879, 1880, 1881, 1882, 1883, and 1884, and enclose the same for publication in your forthcoming report.

Respectfully submitted,

CHAS. MITCHELL, M. D.,
Health Officer.

Mortality by Months.

| 1879 | CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|------|---------------------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| | CLASS 1—Zymotic Disease. | | | | | | | | | | | | | |
| | Order 1—Miasmatic. | | | | | | | | | | | | | |
| | Carbuncle | | | | 1 | | | | | | | | | 1 |
| | Cholera infantum..... | | | | | 2 | 17 | 9 | 8 | 6 | 2 | | | 44 |
| | Croup..... | 2 | | | 1 | | | | | 1 | 1 | 1 | 1 | 7 |
| | Diarrhea..... | | | | 1 | | | | | | | | | 1 |
| | Diphtheria..... | | 1 | | 1 | | | | | | | | 1 | 3 |
| | Dysentery..... | 2 | | 1 | 1 | 1 | 1 | 7 | 3 | 6 | 5 | 3 | 1 | 31 |
| | Entero-colitis..... | | | 1 | | | 2 | 1 | | 1 | 1 | | | 6 |
| | Erysipelas..... | | | | | | 1 | | | | | 1 | 1 | 3 |
| | Fever, Cerebro-spinal.... | | 1 | | 1 | 1 | 1 | | | | | 2 | | 6 |
| | “ Congestive..... | | | 1 | 1 | 2 | | 1 | | | | 1 | | 6 |
| | “ Malarial..... | | | 1 | | | | 3 | 2 | 2 | 1 | | 1 | 10 |
| | “ Remittent..... | | | | | | | 1 | | | | | | 1 |
| | “ Typhoid..... | | | | | 3 | | 3 | 2 | 3 | 4 | 1 | 6 | 23 |
| | Septicæmia..... | 1 | | | 1 | | | | 1 | | | | | 3 |
| | Whooping cough..... | 1 | | | | | | | | | | | | 1 |
| | | | | | | | | | | | | | | 145 |
| | Order 2—Inoculated. | | | | | | | | | | | | | |
| | Syphilis, congenital..... | 1 | | | | | | | | | | 1 | | 2 |
| | Order 3—Dietetic. | | | | | | | | | | | | | |
| | Alcoholism..... | | 1 | | | | | | 1 | | 1 | | 1 | 4 |
| | Order 4—Parasitic. | | | | | | | | | | | | | |
| | Aphthæ..... | | | | | | | | 1 | | | | | 1 |
| | CLASS 2—Constitutional. | | | | | | | | | | | | | |
| | Order 1—Diathetic. | | | | | | | | | | | | | |
| | Anæmia..... | | | | | | | | | | | | 1 | 1 |
| | Cancer, not stated..... | | 1 | | | | | | 1 | | | | | 2 |
| | “ Rectum..... | 1 | | | | | | | | | | | | 1 |
| | “ Uterus..... | | | 1 | | | | | | 2 | | | | 3 |
| | Dropsy..... | 1 | | | 2 | 1 | | 1 | 1 | 2 | 1 | 1 | 1 | 11 |
| | Marasmus..... | 1 | 1 | | 1 | 2 | 2 | 1 | 1 | 2 | 2 | | | 13 |
| | Rheumatism..... | 1 | | | 1 | | | | | 1 | 1 | | 1 | 5 |
| | | | | | | | | | | | | | | 36 |
| | Order 2—Tubercular. | | | | | | | | | | | | | |
| | Abcess psoas..... | | | 1 | | | | | | | | | | 1 |
| | Hydrocephalus..... | | | | | | | 1 | 3 | | | | | 4 |
| | Phthisis pulmonalis..... | 14 | 12 | 10 | 19 | 11 | 10 | 11 | 5 | 13 | 8 | 11 | 11 | 135 |

Mortality by Months.—Continued.

| 1879 | CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | Septemb'r | October. | Novemb'r | December | Total. |
|------|-----------------------------|----------|-----------|--------|--------|------|-------|-------|---------|-----------|----------|----------|----------|----------|
| | Enteritis..... | 2 | 1 | | | 2 | | | 2 | 1 | | 2 | 1 | 11 |
| | Gastritis..... | | | | 2 | 1 | | 1 | | | | | | 4 |
| | Gastro-enteritis..... | | | | | 1 | | 1 | | | | | | 2 |
| | Hæmatemesis | | | | | | | | 1 | | | | | 1 |
| | Hernia..... | | | | 1 | | | | | | | | | 1 |
| | Hepatitis..... | | | | | | | | 1 | | | | | 1 |
| | Hypertrophy of liver.... | | | 1 | 1 | | | | | | 1 | | | 3 |
| | Intussusception | | | | | | | 1 | | | | | | 1 |
| | Peritonitis..... | 2 | | | | | | | | | 1 | | | 3 |
| | Ranula..... | | | 1 | | | | | | | | | | 1 |
| | Rupture of gall bladder | | | | | | | | | | | 1 | | 1 |
| | Stricture of intestines.... | | | | | | | | 1 | | | | | 1 |
| | Typhlitis..... | | | | | | | | | | 1 | | | 1 |
| | | | | | | | | | | | | | | <hr/> 33 |
| | Order 6—Generative. | | | | | | | | | | | | | |
| | Ovarian tumor..... | | | | | | | | | | | 1 | | 1 |
| | Order 7—Locomotory, oss's | | | | | | | | | | | | | |
| | Caries of Vertebra - | | | | | | | | | 1 | | | | 1 |
| | CLASS 4—Developmental. | | | | | | | | | | | | | |
| | Order 1—Children. | | | | | | | | | | | | | |
| | Dentition..... | | | | | | 1 | 3 | 6 | 1 | 2 | | 2 | 15 |
| | Order 2—Women. | | | | | | | | | | | | | |
| | Puerperal convulsions.... | | | | | | | 1 | | | | | | 1 |
| | " fever..... | 1 | | | | | | | | | | | | 1 |
| | Womb disease..... | | | | | | | | | 1 | | | | 1 |
| | | | | | | | | | | | | | | <hr/> 3 |
| | Order 3—Old age. | | | | | | | | | | | | | |
| | Debility, senile..... | 3 | 5 | 6 | 4 | 1 | 2 | 2 | 2 | 5 | 3 | | 3 | 36 |
| | Gangrene " | | | | | | | 1 | | | | | 1 | 2 |
| | | | | | | | | | | | | | | <hr/> 38 |
| | CLASS 5—Violence. | | | | | | | | | | | | | |
| | Order 1—Accidents. | | | | | | | | | | | | | |
| | Burns..... | 2 | 1 | 1 | | | | | | | | | 1 | 5 |
| | Concussion of brain..... | | | | | | | 1 | | | | | | 1 |
| | Drowned..... | | | 1 | | | | | | | | | | 1 |
| | Injuries by railroad..... | | | 1 | | | 1 | | | 1 | | | | 3 |

Mortality by Months—Continued.

| 1880 | CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | Septemb'r | October. | November. | December. | Total. |
|------|---------------------------------|----------|-----------|--------|--------|------|-------|-------|---------|-----------|----------|-----------|-----------|--------|
| | Order 3—Dietetic. | | | | | | | | | | | | | |
| | Alcoholism..... | | | | | | 1 | | | | 1 | 1 | 1 | 4 |
| | Inanition..... | | | | | | | 2 | | | | | | 2 |
| | Purpura hemorrhagica..... | | | | | | 1 | 1 | | | | | | 2 |
| | | | | | | | | | | | | | | 8 |
| | Order 4—Parasitic. | | | | | | | | | | | | | |
| | Aphthæ..... | | | | | | | | | | | 1 | | 1 |
| | Helminthiasis..... | | | | | | | | | | | | 1 | 1 |
| | | | | | | | | | | | | | | 2 |
| | CLASS 2—Constitutional. | | | | | | | | | | | | | |
| | Order 1—Diathetic. | | | | | | | | | | | | | |
| | Anæmia..... | | 1 | | | | | | | 1 | | | | 2 |
| | Cancer, locat'n not stated..... | | 2 | | | 1 | 2 | | | | | | 1 | 6 |
| | “ of breast..... | | | 1 | | | | | | | | | | 1 |
| | “ of uterus..... | | 1 | | | | | | | 1 | | | | 2 |
| | Dropsy..... | 1 | 1 | 2 | | 2 | 2 | 2 | 5 | 2 | 2 | 2 | | 21 |
| | Marasmus..... | | | | 1 | | 1 | 5 | 2 | 1 | | | | 10 |
| | Rheumatism..... | | | | 1 | | | | | | | 1 | 1 | 3 |
| | | | | | | | | | | | | | | 45 |
| | Order 2—Tubercular. | | | | | | | | | | | | | |
| | Hydrocephalus..... | | | | | | 1 | 1 | | | | | | 2 |
| | Phthisis pulmonalis..... | 7 | 17 | 16 | 12 | 14 | 8 | 13 | 9 | 12 | 12 | 9 | 13 | 142 |
| | Scrofula..... | | | 1 | | 1 | 1 | 1 | | | 1 | | | 5 |
| | Tabes mesenterica..... | 1 | | | | | | | | | | | | 1 |
| | Tubercular meningitis..... | 2 | 1 | | | | | | | 1 | | | 2 | 6 |
| | | | | | | | | | | | | | | 156 |
| | CLASS 3—Local. | | | | | | | | | | | | | |
| | Order 1—Nervous. | | | | | | | | | | | | | |
| | Apoplexy..... | 1 | | | | | | 1 | | | | 3 | | 5 |
| | Cerebritis..... | | 1 | | 1 | 1 | 1 | 1 | 1 | 2 | | 1 | 1 | 10 |
| | Chorea..... | 1 | | | | | | | | | | | 1 | 2 |
| | Congestion of brain..... | 1 | 2 | 2 | | | 1 | 6 | 1 | | | | | 13 |
| | Convulsions, infantile..... | 1 | | | | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 2 | 20 |
| | Epilepsy..... | 1 | | | | 1 | | | | | | | | 2 |
| | Exhaustion..... | | 1 | | 2 | 1 | 2 | | 3 | | 2 | | | 11 |
| | Meningitis..... | 1 | 1 | 1 | | 1 | 1 | 2 | 2 | 1 | 2 | | | 12 |
| | Paralysis, general..... | 1 | 2 | 2 | 1 | 2 | 2 | 1 | | | 1 | | 1 | 13 |
| | Softening of brain..... | | | | | | | | 1 | | | | 1 | 2 |
| | Sunstroke..... | | | | | | | 1 | | | | | | 1 |

[illegible]

[illegible]

Mortality by Months—Continued.

| 1880 | CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | Septemb'r. | October. | November. | December. | Total. |
|------|----------------------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| | <i>Order 3—Suicide.</i> | | | | | | | | | | | | | |
| | By cutting..... | | | | | | | | | | | 1 | | 1 |
| | By poison..... | | | | 2 | | | | | | | | | 2 |
| | | | | | | | | | | | | | | 3 |
| | Unknown..... | 4 | 5 | | 5 | 5 | 6 | 5 | 8 | 5 | 6 | 4 | 9 | 65 |
| | | | | | | | | | | | | | | 930 |
| 1881 | <i>CLASS 1—Zymotic diseases.</i> | | | | | | | | | | | | | |
| | <i>Order 1—Miasmatic.</i> | | | | | | | | | | | | | |
| | Cholera infantum..... | | | | | 2 | 17 | 18 | 12 | 6 | 3 | | | 61 |
| | Cholera morbus..... | | | | | | 2 | 1 | | | | | | 3 |
| | Croup..... | 1 | 1 | 1 | 2 | | | | | 1 | 3 | 1 | 2 | 12 |
| | Diarrhea..... | 1 | | | 1 | 1 | | 1 | 1 | 2 | | | 2 | 9 |
| | Diphtheria..... | 1 | | 1 | 1 | 1 | | | | 1 | 2 | 1 | 1 | 9 |
| | Dysentery..... | 1 | | | 1 | 3 | 3 | 2 | 6 | 10 | 9 | 6 | 1 | 42 |
| | Enterocolitis..... | | | | | | 9 | 5 | 5 | 2 | | 1 | | 22 |
| | Erysipelas..... | | | 1 | | | | | 1 | 1 | | | 1 | 4 |
| | Fever, cerebro spinal..... | | | | 1 | 1 | | | | | 1 | 1 | | 4 |
| | " congestive..... | 2 | | | 1 | | | | | | | 3 | | 6 |
| | " continued..... | 1 | | | | | | | | 1 | | | | 2 |
| | " malarial..... | | | | | 1 | 1 | 3 | 2 | 3 | 3 | 4 | 1 | 23 |
| | " remittent..... | | | | 1 | 2 | | | | | | 1 | | 4 |
| | " scarlet..... | 3 | 1 | 2 | 1 | | 1 | | | | | | 1 | 9 |
| | " typhoid..... | | | 2 | | 1 | 2 | 3 | 3 | 8 | 6 | 9 | | 38 |
| | Menses..... | 2 | 7 | 9 | 8 | 4 | 1 | 2 | | | | | | 33 |
| | Pyæmia..... | | | | | | | | | | 1 | 1 | | 2 |
| | Septicæmia..... | 2 | | 1 | | 1 | 1 | | | 1 | | | | 6 |
| | Whooping cough..... | | 1 | | 1 | | | | | 1 | | | | 3 |
| | | | | | | | | | | | | | | 292 |
| | <i>Order 2—Inoculated.</i> | | | | | | | | | | | | | |
| | Syphilis, congenital..... | | | | | | 1 | | | 1 | | | | 2 |
| | Syphilis tertiary..... | 2 | 1 | | | | | | | | | | | 3 |
| | | | | | | | | | | | | | | 5 |
| | <i>Order 3—Dietetic.</i> | | | | | | | | | | | | | |
| | Alcoholism..... | | | | 1 | | 1 | 1 | | 1 | | | | 4 |
| | Delirium tremens..... | | | | 1 | | | | | | | | | 1 |
| | Inanition..... | | | | 1 | | | 1 | | 1 | 1 | 1 | 1 | 6 |
| | | | | | | | | | | | | | | 11 |
| | <i>Order 4—Parasitic.</i> | | | | | | | | | | | | | |
| | Vermes-intestini..... | | | | | | | | | 1 | | | | 1 |

[illegible]

Mortality by Months.

| 1881 | CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|-----------------------------|--------------------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| <i>Order 2—Circulatory.</i> | | | | | | | | | | | | | | |
| | Angina pectoris | | | 1 | 1 | | | | | | | | | 2 |
| | Aneurism | | 1 | | | | 1 | 1 | | | | | | 3 |
| | Embolism, cerebral | | | | | | | 1 | | | | | | 1 |
| | Epistaxis | | | | | | | | | | | | 1 | 1 |
| | Heart disease, organic | 4 | 4 | 5 | 4 | 4 | 5 | | 7 | 6 | 2 | 3 | 4 | 48 |
| | Heart, dropsey | 1 | | | | | | | | | 3 | | | 4 |
| | Heart, fatty degenerat'n | 1 | | | | | | | | | | | | 1 |
| | Heart, hypertrophy | | | | | 1 | | | | | | | | 1 |
| | Heart, rheumatism | | | | | 3 | | | | | | | | 3 |
| | Heart, valvular disease | | | | | 1 | | | | | | | | 1 |
| | Pericarditis | 1 | | 1 | | | | | | | | | | 2 |
| | | | | | | | | | | | | | | 67 |
| <i>Order 3—Respiratory.</i> | | | | | | | | | | | | | | |
| | Abscess, lungs | | 2 | 1 | 1 | | | | | | | | | 4 |
| | Asphyxia | 2 | 1 | | | | | | | | | | | 3 |
| | Asthma | | 3 | 1 | 1 | 1 | | | 1 | | | 1 | | 8 |
| | Bronchitis | 1 | 1 | | 1 | | | 1 | | | | | | 4 |
| | " capillary | 1 | | | | | | | | | | | | 1 |
| | Congestion, lungs | | 2 | 5 | 1 | | | 1 | 1 | 3 | 1 | 3 | | 18 |
| | Empyema | | | | | 1 | | | | | | | | 1 |
| | Hemorrhage, lungs | | | | | | | | | | | | 2 | 2 |
| | Laryngitis | | 1 | 1 | | | | | | | | | | 2 |
| | Pneumonia | 12 | 4 | 15 | 9 | 3 | 1 | 1 | 1 | | 5 | 10 | | 62 |
| | Pneumonia, pleuro | | | | 1 | | | 1 | | | | | | 2 |
| | | | | | | | | | | | | | | 107 |
| <i>Order 4—Digestive.</i> | | | | | | | | | | | | | | |
| | Abscess, liver | | 1 | 2 | 1 | | | | | 1 | | | | 5 |
| | Bowels, invagination | | | | | | | | | | 1 | | | 1 |
| | Bowels, ulceration | | | | | | 1 | | | | 1 | | 1 | 3 |
| | Cirrhosis, liver | 1 | | | | | | 1 | | 1 | | | | 3 |
| | Calculi, biliary | | | | | | 1 | | | | | | | 1 |
| | Colic | 1 | | | 1 | | 1 | | | | | | | 3 |
| | Enteritis | | 2 | | | | 4 | | 3 | 2 | 3 | 1 | 3 | 18 |
| | Gastro enteritis | | | | 1 | | 1 | 2 | | | | 1 | | 5 |
| | Gastritis | | 1 | 2 | 1 | 3 | | 2 | | | | | 1 | 10 |
| | Hepatitis | | | | | | 1 | | | | | | | 1 |
| | Hemorrhage, bowels | | | 1 | | | | | | | | | | 1 |
| | Hemorrhage, stomach | 1 | | | | | | | | | | | | 2 |
| | Intussusception | | | | | 1 | | | | 1 | | | | 1 |
| | Icterus | | | | 1 | | | | | | | | | 1 |
| | Peritonitis | | | | | | | | | | 1 | | | 1 |
| | Stomatitis | | | | | | | | | | 1 | | | 1 |

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Mortality by Months.—Continued.

| 1881 | CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|------|---------------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| | Exposure..... | 1 | | | | | | | | | | 1 | | 2 |
| | Exp'n soda water gene'r. | | | | | 1 | | | | | | | | 1 |
| | Lightning..... | | | | | | | 1 | | | | | | 1 |
| | Neglect..... | | | | | | | | | | | 1 | | 1 |
| | Poisoned, concent'd lye.. | | | | | | | | 1 | | | | | 1 |
| | " morphine..... | | | | | | | 1 | | | | | | 1 |
| | " Arsenic..... | 1 | | | | | | | | | | | | 1 |
| | Railroad injuries..... | 1 | | | | | | | | | 1 | 2 | | 4 |
| | Shock surgical operation | | | | | | | | | 1 | | | | 1 |
| | Suffocation..... | 1 | | | | | | | | | | | | 1 |
| | Wound, gun-shot..... | | | | | | 1 | | | | | | | 1 |
| | " accidental..... | 3 | | | | | | | | | | | | 3 |
| | | | | | | | | | | | | | | 33 |
| | <i>Order 2—Homicide.</i> | | | | | | | | | | | | | |
| | Murder..... | | | | | | | | 2 | | | | | 2 |
| | Pistol-shot wound..... | | | | | 1 | | | | | | | | 1 |
| | | | | | | | | | | | | | | 3 |
| | <i>Order 3—Suicide.</i> | | | | | | | | | | | | | |
| | By laudanum..... | | | 1 | | | | | | | | | | 1 |
| | By morphine..... | | | | | | | | 1 | | 1 | 1 | | 3 |
| | By pistol-shot..... | | | | 1 | | | | | | | | | 1 |
| | By Opium..... | | | | | | | | 1 | | | | | 1 |
| | | | | | | | | | | | | | | 6 |
| | Unknown..... | 11 | 7 | 11 | 7 | 9 | 9 | 8 | 6 | 11 | 11 | 9 | 7 | 106 |
| | | | | | | | | | | | | | | 1145 |
| 1882 | CLASS 1—Zymotic diseases. | | | | | | | | | | | | | |
| | <i>Order 1—Miasmatic.</i> | | | | | | | | | | | | | |
| | Cholera infantum..... | 1 | | | 1 | 2 | 7 | 7 | 3 | 5 | 1 | | | 27 |
| | Cholera morbus..... | | | | | | 1 | 1 | | | | | | 2 |
| | Croup..... | 3 | 1 | 1 | | 1 | 1 | | | | 1 | 2 | 4 | 14 |
| | Diarrhea..... | | | | | 2 | | 6 | 1 | | | 2 | 2 | 13 |
| | Diphtheria..... | | | | 1 | | | | 2 | 1 | | 1 | | 5 |
| | Dysentery..... | 1 | 2 | | | 2 | 3 | 6 | 5 | 6 | 3 | 5 | 1 | 34 |
| | Enterocolitis..... | | | | | 1 | | 3 | 1 | 1 | 1 | 1 | | 8 |
| | Erysipelas..... | | 1 | | | 1 | | | | | | 1 | | 3 |
| | Fever, cerebro-spinal .. | 1 | 2 | 2 | 1 | | | | | 1 | | | | 7 |
| | " congestive..... | | | | | | | | | | | | 2 | 2 |
| | " malarial..... | | | 2 | 2 | | 2 | | 7 | 5 | 4 | 4 | 1 | 27 |
| | " remittent..... | | | | | | | 1 | | | | | | 1 |
| | " scarlet..... | | | 1 | 2 | 4 | 2 | | 1 | 2 | | | 4 | 16 |

[illegible]

Mortality by Months—Continued.

| 1882 | CAUSE OF DEATH. | January. | February. | March | April. | May. | June. | July. | August. | Septemb'r | October. | Novemb'r | December | Total. |
|------|-----------------------------|----------|-----------|-------|--------|------|-------|-------|---------|-----------|----------|----------|----------|--------|
| | CLASS 3—Local. | | | | | | | | | | | | | |
| | Order 1—Nervous. | | | | | | | | | | | | | |
| | Apoplexy | 1 | ... | ... | 1 | ... | ... | ... | 1 | 1 | ... | ... | ... | 4 |
| | Arachnitis | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 |
| | Congestion of brain | 3 | 2 | ... | 3 | ... | 2 | 2 | 2 | 1 | 1 | 7 | ... | 23 |
| | Concussion | ... | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | ... | ... | 2 |
| | Convulsions, infantile... | 4 | 2 | 4 | 3 | 2 | 5 | 1 | 7 | 4 | 4 | 2 | 1 | 39 |
| | Cerebritis | ... | 1 | 1 | 2 | ... | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 13 |
| | Epilepsy | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| | Exhaustion | 3 | 1 | ... | 1 | ... | 2 | ... | ... | ... | 1 | 1 | ... | 9 |
| | Hydrocephalus | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| | Hemiplegia | ... | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | 1 | ... | 4 |
| | Meningitis | 1 | 2 | 3 | 1 | 1 | 3 | 3 | 1 | 1 | 2 | 1 | 2 | 20 |
| | Paralysis, general | ... | ... | 2 | ... | 1 | 1 | 3 | ... | 2 | ... | 2 | 4 | 15 |
| | Paralysis of brain | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| | Paralysis of heart | ... | ... | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | ... | 2 |
| | Softening of brain | 2 | ... | 1 | ... | ... | ... | 1 | ... | ... | 1 | ... | ... | 5 |
| | Softening of spinal cord.. | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 |
| | Sunstroke | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 |
| | Spinal sclerosis | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| | Tetanus, idiopathic | ... | ... | 2 | ... | ... | ... | ... | 1 | 1 | ... | ... | ... | 4 |
| | Tetanus traumatic | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | ... | 2 |
| | Trismus nascentium | ... | 4 | ... | ... | 2 | 2 | 1 | ... | 1 | 1 | 5 | 2 | 18 |
| | Tumor of brain | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 |
| | Order 2—Circulatory. | | | | | | | | | | | | | 168 |
| | Angina pectoris | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| | Aneurism | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| | Embolism, not defined... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | 1 |
| | Heart disease, organic... | 1 | 4 | 5 | 6 | ... | 2 | 2 | 2 | 1 | ... | 1 | 2 | 28 |
| | Heart, dropsy | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | 2 |
| | Heart, hypertrophy | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 |
| | Heart, paralysis | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | 1 |
| | Heart, rheumatism | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| | Heart, valvular disease.. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 2 | 3 |
| | Pericarditis | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 |
| | Order 3—Respiratory. | | | | | | | | | | | | | 38 |
| | Asthma | 1 | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | 1 | ... | 4 |
| | Bronchitis | 2 | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | 1 | ... | 5 |
| | Bronchitis, capillary .. | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 |
| | Congestion lungs | 2 | 3 | 2 | 3 | ... | ... | ... | 1 | 1 | 1 | ... | 2 | 15 |
| | Emphysema | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| | Hydrothorax | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| | Laryngitis | ... | 2 | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 3 |

| 1882 | CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | Septemb'r | October. | Novemb'r | December | Total. |
|------|-----------------------------------|----------|-----------|--------|--------|------|-------|-------|---------|-----------|----------|----------|----------|--------|
| | Pleuritis..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| | Pneumonia | 8 | 6 | 10 | 4 | 5 | 8 | 2 | 1 | 1 | 2 | 5 | 10 | 68 |
| | Order 4—Digestive. | | | | | | | | | | | | | 24 |
| | Abcess of liver.. .. | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | 1 | ... | ... | 3 |
| | Calculus, biliary | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 |
| | Cirrhosis..... | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 | ... | ... | ... | 1 |
| | Congestion of liver..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| | Dyspepsia | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| | Enteritis..... | ... | 1 | ... | 1 | 1 | ... | 1 | 3 | 2 | 2 | 1 | ... | 13 |
| | Gastro-enteritis..... | ... | 1 | 1 | 1 | ... | 2 | 2 | ... | 2 | ... | ... | ... | 9 |
| | Gastritis..... | 1 | ... | ... | ... | 1 | ... | ... | 1 | 1 | ... | 1 | ... | 6 |
| | Hepatitis | ... | ... | ... | ... | 1 | ... | ... | 1 | ... | ... | ... | ... | 2 |
| | Hernia | 1 | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | 3 |
| | Hypertrophy liver | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| | Hemorrhage bowels..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| | Intussusception..... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| | Jaundice | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| | Peritonitis | ... | ... | ... | 2 | 1 | ... | 1 | ... | ... | ... | ... | ... | 4 |
| | Ulceration of bowels.... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| | Order 5—Urinary. | | | | | | | | | | | | | 51 |
| | Bright's disease..... | 1 | ... | 1 | 3 | ... | 2 | ... | 1 | ... | 1 | ... | ... | 11 |
| | Diabetes mellitus..... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| | Nephritis | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | 2 |
| | Uremia | ... | ... | ... | 1 | ... | 1 | 1 | ... | 1 | 1 | ... | ... | 5 |
| | Order 6—Generative. | | | | | | | | | | | | | 19 |
| | Dysmenorrhœa | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| | Metritis | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| | Ovarian tumor | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| | Order 7—Locomotorory oss's | | | | | | | | | | | | | 3 |
| | Caries, vertebrae | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| | Spine, Pott's disease..... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 |
| | CLASS 4—Developmental. | | | | | | | | | | | | | 2 |
| | Order 1—Children. | | | | | | | | | | | | | |
| | Atelectasis pulmonum... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| | Cyanosis..... | ... | 1 | 1 | ... | ... | ... | 1 | ... | ... | ... | 1 | ... | 4 |
| | Dentition | 2 | ... | 2 | 2 | 2 | 5 | 3 | 6 | 4 | 3 | 1 | 1 | 31 |
| | Hemorrhage, umbilical.... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | 1 |
| | Scleroma neonatorum.... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 1 |

Mortality by Months—Continued.

| CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | Septemb'r | October. | Novemb'r | December | Total. |
|----------------------------|----------|-----------|--------|--------|------|-------|-------|---------|-----------|----------|----------|----------|--------|
| <i>Order 2—Women.</i> | | | | | | | | | | | | | |
| Abortion..... | | 1 | | | | | | | 1 | | | | 2 |
| Puerperal mania..... | 1 | | | | | | | | | | | | 1 |
| " septicæmia..... | 1 | | | | | | | | | | | | 1 |
| Uterine hemorrhage..... | | | | | | | | | | 1 | | | 1 |
| | | | | | | | | | | | | | 5 |
| <i>Order 3—Old age.</i> | | | | | | | | | | | | | |
| Debility, senile..... | 1 | 1 | 1 | 4 | 5 | 5 | 3 | 2 | 2 | 1 | 3 | 9 | 37 |
| <i>CLASS 5—Violence.</i> | | | | | | | | | | | | | |
| <i>Order 1—Accidents.</i> | | | | | | | | | | | | | |
| Accidental fall..... | | | | | | | 1 | | | | | | 1 |
| Burns..... | 1 | | 1 | | | | | | | | 1 | | 3 |
| Crushed..... | | | | | | | | | | | 1 | | 1 |
| Concussion of brain..... | | | | | | | | | | 2 | | | 2 |
| Drowned..... | 1 | | | | | 1 | | | | | | | 2 |
| Exposure..... | | 1 | | | | | | | | | | 2 | 3 |
| Fracture spine..... | | | | | | | | | | 1 | | | 1 |
| Hemorrhage from wound..... | | | | | | 1 | | | | | | | 1 |
| Neglect..... | | 1 | | 1 | | | | | | | | | 2 |
| Poisoned, accidental..... | | | 2 | | | | | | | | | | 2 |
| " by arsenic..... | | | | | | | | | 2 | | | | 2 |
| " by morphine..... | | | | | | 1 | | | | | | | 1 |
| " by opium..... | | | | | | | | | | 1 | | | 1 |
| Injuries, railroad..... | | 1 | 1 | | 2 | | 2 | | 2 | | 3 | | 11 |
| Suffocation..... | | | | | | | | 1 | | | 1 | 1 | 3 |
| | | | | | | | | | | | | | 36 |
| <i>Order 2—Homicide.</i> | | | | | | | | | | | | | |
| Manslaughter..... | | | | | | | | 1 | 1 | 1 | | | 3 |
| Stabbed..... | | | | | 1 | | 1 | | | | | | 2 |
| | | | | | | | | | | | | | 6 |
| <i>Order 3—Suicide.</i> | | | | | | | | | | | | | |
| By poison, arsenic..... | | | | | 1 | | | | | 1 | | | 2 |
| " morphine..... | | | | | | 1 | | | | | | | 1 |
| | | | | | | | | | | | | | 3 |
| Unknown..... | 9 | 1 | 6 | 4 | 9 | 3 | 3 | 2 | 4 | 1 | 2 | 1 | 49 |
| | | | | | | | | | | | | | 1085 |

[illegible]

Mortality by Months—Continued.

| 1883 | CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | Septemb'r. | October. | November. | December. | Total. |
|-----------------------------|----------------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| Order 3—Respiratory. | | | | | | | | | | | | | | |
| | Asthma..... | | | | | | | | | | | | 1 | 1 |
| | Bronchitis..... | 1 | 2 | | 3 | 1 | 1 | 1 | 1 | 1 | | 1 | 2 | 16 |
| | Bronchitis, capillary..... | | | 1 | | | | | | | | | | 1 |
| | Congestion of lungs..... | 1 | | 2 | 3 | 4 | | | 3 | 1 | | | | 14 |
| | Hemorrhage of lungs | | 1 | | | | 1 | | | 1 | | | | 3 |
| | Pneumonia | 14 | 8 | 10 | 10 | 13 | 4 | 4 | 1 | | 4 | 9 | 12 | 97 |
| | " pleuro..... | 1 | | | | | | | | | | | | 1 |
| | | | | | | | | | | | | | | 133 |
| Order 4—Digestive. | | | | | | | | | | | | | | |
| | Abscess of liver..... | | 1 | | | | | | | | | | 1 | 2 |
| | Abscess of pancreas..... | | | 1 | | | | | | | | | | 1 |
| | Cirrhosis of liver | | | | | | | 1 | | | 1 | | 2 | 4 |
| | Congestion, bowels | | | 1 | | | | | | 1 | | | | 2 |
| | Congestion, liver..... | | | | | | | 1 | | | | | | 1 |
| | Congestion, stomach..... | | | | | | | 1 | 1 | | | | | 2 |
| | Dyspepsia..... | | | | | | | 1 | | | | | | 1 |
| | Enteritis..... | 1 | | 1 | 8 | 1 | | 7 | | 2 | 2 | 2 | | 25 |
| | Gastritis..... | | | 2 | 1 | | | | | | | 1 | 1 | 7 |
| | Gastro-enteritis..... | 1 | 2 | | | | | | | | | | | 3 |
| | Hemorrhage of bowels... | | | | | | | | 1 | | | | | 1 |
| | Hernia | | | | | | | 1 | 1 | | | | | 2 |
| | Hepatitis | | | | 1 | | | | | | | | | 1 |
| | Hypertrophy of liver..... | | | | | | | 1 | | | | | | 1 |
| | Invagination bowels..... | | | | | | | | 2 | | | | | 2 |
| | Jaundice..... | | | | | 2 | | | | 1 | 1 | | | 4 |
| | Obstruction bowels..... | 1 | | | | | | | | | | | | 1 |
| | Occlusion bowels..... | | | | | | | 1 | | | | | | 1 |
| | Peritonitis | 1 | 1 | | 2 | | | 2 | | | | | | 6 |
| | Stricture bowels..... | | | | | | | | | | | | 1 | 1 |
| | Ulceration stomach | | | | | | | | | | 1 | | | 1 |
| | | | | | | | | | | | | | | 70 |
| Order 5—Urinary. | | | | | | | | | | | | | | |
| | Bright's disease..... | 1 | | 1 | | | | | 2 | 2 | 1 | | | 7 |
| | Calculus | | | | | | | | | 1 | | | | 1 |
| | Diabetes mellitus..... | | | | | | 1 | | | | | | | 1 |
| | Nephritis | | | | | | | | | | | | 1 | 1 |
| | Cystitis..... | | | 1 | | 1 | | | | | | | | 2 |
| | Uræmia..... | 1 | 1 | 1 | | 1 | | | | | 1 | 2 | | 7 |
| | | | | | | | | | | | | | | 19 |
| Order 6—Generative. | | | | | | | | | | | | | | |
| | Cellulitis, pelvic..... | | | | | | | 1 | | | | | | 1 |
| | Metritis | | 1 | | | | 1 | | | 1 | | | | 3 |

Mortality by Months—Continued.

| 1883 | CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | Septemb'r. | October. | Novemb'r. | December. | Total. |
|------|---------------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| | Concussion of brain..... | | | | | | | | | | | 1 | | 1 |
| | Crushed | | | 3 | | | | | | | | | 1 | 4 |
| | Dislocation of neck | 1 | | | | | | | | | | | | 1 |
| | Drowned | | | | 1 | 1 | | | | | | | | 2 |
| | Exposure | | 1 | | | | | | | | | | | 4 |
| | Fracture femur..... | | | | | | | | | | | | | 1 |
| | Fracture skull..... | | | | | | | | | 1 | | | | 1 |
| | Gun-shot wound..... | | 1 | 1 | | | | | | | | | | 2 |
| | Injuries by cars..... | | | | | | | | | 1 | | | | 1 |
| | Injuries by machinery... | | | | | | 1 | | | | | | | 1 |
| | Injuries by mill..... | | | | | | | | | | 1 | | | 1 |
| | Injuries by railroad..... | 1 | | 1 | | 1 | | | | | | | | 3 |
| | Neglect..... | 1 | | | | | | | | | | | | 1 |
| | Rupture abdom. visera... | | | | | | | | | | | 1 | | 1 |
| | Strangulation..... | | | 1 | | | | | | | | | | 1 |
| | Wounds, not defined..... | 1 | | | | | | | | | | | | 1 |
| | <i>Order 2—Homicide.</i> | | | | | | | | | | | | | 33 |
| | Manslaughter | | | | | 1 | | 1 | 2 | 1 | 3 | | 3 | 11 |
| | <i>Order 3—Suicide.</i> | | | | | | | | | | | | | |
| | By poison, chloral | | | | 1 | | | | | | | | | 1 |
| | " " laudanum..... | 1 | | | | | | | | | | | | 1 |
| | " " morphine | | | | 1 | | | 1 | | | 1 | | | 3 |
| | " " strychnia | | | | | | | | | 1 | | | | 1 |
| | " shooting | | | 1 | | | | | | | | | | 1 |
| | Not defined | | | 1 | | | 1 | | | | 1 | | 1 | 4 |
| | Unknown..... | 2 | 3 | 1 | 6 | 3 | 1 | 1 | 1 | 5 | | 1 | 1 | 11 |
| | | | | | | | | | | | | | | 25 |
| | | | | | | | | | | | | | | 1175 |

1884 CLASS 1—Zymotic diseases

Order 1—Miasmatic.

| | | | | | | | | | | | | | | |
|-----------------------|---|---|---|---|---|---|---|----|---|----|---|---|--|----|
| Carbuncle..... | | 1 | | | | | | | | | | | | 1 |
| Cholera infantum..... | | | 1 | | 1 | 2 | 7 | 7 | 8 | 3 | | | | 29 |
| Cholera morbus..... | | | | | | 1 | | | | | | | | 1 |
| Croup..... | 2 | | 2 | | 2 | | 1 | | 4 | 4 | 5 | 2 | | 23 |
| Diarrhea..... | | | | | | 1 | 2 | 1 | 1 | 2 | | | | 7 |
| Diphtheria..... | | | | 1 | | 1 | 4 | 11 | 9 | 10 | 7 | 1 | | 44 |
| Dysentery..... | 2 | 1 | 1 | | | 5 | 8 | 13 | 6 | 4 | 3 | 4 | | 47 |
| Entero-colitis..... | | | | | | 3 | 1 | 1 | 1 | 1 | | | | 7 |
| Erysipelas..... | | | | 1 | | | | | | | 1 | 1 | | 3 |

Mortality by Months.—Continued.

| 1884 | CAUSE OF DEATH. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|------|---------------------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| | Fever, congestive..... | | | | 2 | | | | | 1 | | 1 | | 4 |
| | Fever, intermittent..... | | | | 1 | | | | | | | | | 1 |
| | Fever, remittent..... | | | | | 1 | 2 | 2 | 3 | 7 | 4 | 1 | 3 | 23 |
| | Fever, scarlet..... | | | 2 | | | | | | | | | | 2 |
| | Fever, typhoid..... | 4 | 2 | 1 | 3 | 3 | 2 | 9 | 2 | 10 | 4 | 1 | 2 | 43 |
| | Measles..... | 2 | 4 | 2 | 1 | 1 | | | | | | | | 10 |
| | Pyæmia..... | | | | | | | | | | | 1 | | 1 |
| | Septicæmia..... | | | 2 | 4 | | | 1 | | 2 | 1 | | 1 | 11 |
| | Small-pox..... | 1 | 3 | 2 | 6 | 3 | 2 | | | | | | | 17 |
| | Toxæmia..... | | | | | | | | | | | 1 | | 1 |
| | Whooping cough..... | 1 | | | 3 | 1 | | 2 | 2 | 1 | 3 | | 1 | 14 |
| | <i>Order 2—Inoculated.</i> | | | | | | | | | | | | | 288 |
| | Syphilis, congenital..... | | | | | | | | | 1 | | | | 1 |
| | Syphilis, tertiary..... | | | | | | | 1 | | | 1 | 1 | | 3 |
| | <i>Order 3—Dietetic.</i> | | | | | | | | | | | | | 4 |
| | Alcoholism..... | 1 | | | | | | | | | | | | 1 |
| | Inanition..... | 1 | 1 | 3 | 2 | | 2 | 2 | 6 | | 1 | 1 | 3 | 22 |
| | Purpura-hæmorrhagica..... | | | | | 1 | | | | | | | | 1 |
| | <i>Order 4—Parasitic.</i> | | | | | | | | | | | | | 23 |
| | Helminthiasis..... | | | 1 | | | | | | | | | | 1 |
| | <i>CLASS 2—Constitutional.</i> | | | | | | | | | | | | | |
| | <i>Order 1—Diathetic.</i> | | | | | | | | | | | | | |
| | Anæmia..... | | 1 | | | 1 | | | | | | | | 2 |
| | Cancer, locat'n not stated..... | | 1 | 2 | | 2 | 2 | 1 | | | | | | 8 |
| | Cancer of heart and lungs..... | | | | | 1 | | | | | | | | 1 |
| | Cancer of leg..... | | 1 | | | | | | | | | | | 1 |
| | Cancer of stomach..... | | | | | | 1 | 2 | | | | 1 | 1 | 5 |
| | Cancer of uterus..... | | 1 | | | | | | | | | | | 1 |
| | Dropsy..... | 2 | 1 | 1 | 4 | 1 | 1 | 2 | 2 | | 2 | 1 | 1 | 18 |
| | Gout..... | | | | | | | | | 1 | | | | 1 |
| | Marasmus, infantile..... | 3 | | | 3 | 3 | 3 | 3 | 6 | | 3 | 2 | | 26 |
| | Marasmus, senile..... | | | | 1 | | 1 | | | | | 1 | | 3 |
| | Rheumatism..... | 2 | | | | | | | | | 1 | | | 3 |
| | <i>Order 2—Tubercular.</i> | | | | | | | | | | | | | 69 |
| | Abscess pueræ..... | | | | | 1 | | | | | | | | 1 |
| | Hæmoptysis..... | | | | 1 | | | | | | | | 1 | 2 |
| | Phthisis pulmonalis..... | 14 | 10 | 14 | 10 | 16 | 17 | 15 | 19 | 9 | 11 | 12 | 14 | 161 |
| | Scrofula..... | | 2 | | 2 | 1 | | | 1 | | | 1 | 1 | 8 |

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[illegible]

LOCAL AND COUNTY BOARDS.

| SEX. | Jan. | | Feb. | | March. | | April. | | May. | | June. | | July. | | August. | | Sept. | | Oct. | | Nov. | | Dec. | | Total White. | Total Colored. | Sum Total. |
|--------------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|---------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------------|----------------|------------|
| | White. | Colored. | White. | Colored. | White. | Colored. | White. | Colored. | White. | Colored. | White. | Colored. | White. | Colored. | White. | Colored. | White. | Colored. | White. | Colored. | White. | Colored. | White. | Colored. | | | |
| 1879. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Male | 19 | 10 | 16 | 11 | 18 | 8 | 21 | 12 | 8 | 16 | 8 | 17 | 17 | 16 | 20 | 14 | 20 | 16 | 16 | 12 | 8 | 13 | 15 | 186 | 162 | 257 | |
| Female | 24 | 18 | 13 | 14 | 15 | 18 | 18 | 14 | 15 | 18 | 13 | 22 | 6 | 19 | 8 | 19 | 6 | 8 | 11 | 9 | 11 | 13 | 9 | 159 | 183 | 342 | |
| Total | 43 | 28 | 29 | 25 | 33 | 23 | 39 | 26 | 23 | 32 | 21 | 39 | 23 | 35 | 28 | 33 | 28 | 21 | 21 | 19 | 24 | 24 | 24 | 354 | 345 | 699 | |
| 1880. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Male | 13 | 9 | 22 | 17 | 16 | 18 | 13 | 15 | 18 | 33 | 24 | 27 | 26 | 20 | 22 | 18 | 22 | 14 | 13 | 13 | 25 | 17 | 25 | 258 | 205 | 463 | |
| Female | 17 | 16 | 15 | 25 | 12 | 17 | 13 | 25 | 16 | 28 | 30 | 32 | 26 | 26 | 18 | 14 | 13 | 16 | 16 | 16 | 14 | 15 | 15 | 226 | 241 | 367 | |
| Total | 30 | 25 | 37 | 42 | 28 | 33 | 28 | 40 | 34 | 61 | 54 | 60 | 52 | 46 | 35 | 32 | 35 | 30 | 29 | 29 | 39 | 40 | 40 | 484 | 447 | 930 | |
| 1881. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Male | 25 | 30 | 16 | 15 | 25 | 36 | 28 | 17 | 25 | 32 | 16 | 17 | 20 | 22 | 29 | 26 | 35 | 22 | 22 | 27 | 27 | 33 | 17 | 310 | 274 | 584 | |
| Female | 19 | 16 | 13 | 21 | 30 | 14 | 20 | 27 | 22 | 25 | 24 | 39 | 30 | 13 | 31 | 23 | 25 | 25 | 25 | 27 | 27 | 20 | 21 | 305 | 256 | 561 | |
| Total | 44 | 46 | 29 | 36 | 55 | 50 | 48 | 44 | 48 | 57 | 40 | 63 | 47 | 35 | 60 | 49 | 60 | 47 | 47 | 54 | 54 | 53 | 38 | 615 | 530 | 1145 | |
| 1882. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Male | 23 | 27 | 13 | 19 | 16 | 29 | 18 | 18 | 29 | 17 | 27 | 29 | 23 | 53 | 25 | 24 | 23 | 18 | 18 | 23 | 23 | 25 | 20 | 262 | 282 | 544 | |
| Female | 34 | 12 | 15 | 23 | 16 | 24 | 15 | 19 | 24 | 38 | 28 | 27 | 30 | 18 | 31 | 27 | 20 | 19 | 29 | 24 | 17 | 23 | 23 | 245 | 295 | 541 | |
| Total | 57 | 39 | 28 | 42 | 33 | 61 | 33 | 37 | 53 | 45 | 55 | 60 | 53 | 86 | 56 | 51 | 43 | 37 | 47 | 47 | 42 | 48 | 43 | 507 | 577 | 1085 | |
| 1883. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Male | 35 | 16 | 19 | 27 | 31 | 25 | 25 | 24 | 29 | 16 | 21 | 25 | 24 | 20 | 30 | 22 | 24 | 11 | 11 | 20 | 20 | 23 | 22 | 312 | 290 | 602 | |
| Female | 23 | 29 | 21 | 19 | 29 | 28 | 30 | 29 | 27 | 23 | 29 | 35 | 32 | 18 | 25 | 14 | 12 | 23 | 23 | 20 | 16 | 26 | 26 | 291 | 312 | 603 | |
| Total | 58 | 45 | 40 | 46 | 60 | 53 | 55 | 53 | 56 | 39 | 50 | 56 | 57 | 38 | 55 | 36 | 36 | 34 | 34 | 40 | 36 | 48 | 48 | 603 | 602 | 1205 | |
| 1884. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Male | 22 | 26 | 20 | 16 | 18 | 23 | 15 | 18 | 17 | 17 | 25 | 23 | 30 | 24 | 29 | 21 | 30 | 24 | 24 | 28 | 20 | 25 | 21 | 300 | 260 | 560 | |
| Female | 23 | 18 | 15 | 19 | 18 | 23 | 30 | 23 | 27 | 28 | 19 | 34 | 29 | 27 | 20 | 21 | 21 | 19 | 19 | 21 | 13 | 20 | 17 | 279 | 237 | 516 | |
| Total | 45 | 44 | 35 | 35 | 36 | 46 | 45 | 41 | 44 | 45 | 44 | 64 | 63 | 51 | 50 | 42 | 51 | 43 | 43 | 49 | 45 | 45 | 38 | 579 | 497 | 1076 | |

SOCIAL RELATIONS.

| | Jan. | Feb. | March. | April. | May. | June. | July. | August. | Sept. | Oct. | Nov. | Dec. | Total Colored. | Total White. | Sum Total. |
|---------------|------|------|--------|--------|------|-------|-------|---------|-------|------|------|------|----------------|--------------|------------|
| 1879. | | | | | | | | | | | | | | | |
| Married | 81 | 9 | 7 | 4 | 9 | 10 | 9 | 7 | 10 | 9 | 8 | 9 | 5 | 95 | 189 |
| Single | 26 | 14 | 12 | 15 | 11 | 21 | 28 | 16 | 22 | 19 | 12 | 15 | 15 | 211 | 418 |
| Widow | 6 | 3 | 4 | 2 | 3 | 1 | 1 | ... | 2 | 4 | 1 | 4 | 2 | 34 | 67 |
| Widower | 3 | 2 | 1 | 3 | ... | ... | ... | ... | 1 | 2 | ... | 2 | 1 | 14 | 25 |
| Total | 43 | 28 | 26 | 24 | 23 | 32 | 39 | 23 | 35 | 28 | 21 | 30 | 23 | 354 | 699 |
| 1880. | | | | | | | | | | | | | | | |
| Married | 12 | 7 | 13 | 13 | 5 | 18 | 7 | 14 | 11 | 14 | 8 | 6 | 9 | 150 | 248 |
| Single | 13 | 17 | 21 | 13 | 27 | 38 | 49 | 35 | 31 | 19 | 15 | 24 | 24 | 261 | 569 |
| Widow | 4 | 1 | 3 | 5 | ... | 3 | 3 | 2 | 4 | 2 | 4 | 5 | ... | 49 | 74 |
| Widower | 1 | ... | 1 | 3 | 2 | 2 | 1 | 1 | ... | ... | ... | 3 | ... | 23 | 39 |
| Total | 30 | 25 | 28 | 33 | 34 | 61 | 60 | 52 | 46 | 35 | 27 | 32 | 40 | 483 | 930 |
| 1881. | | | | | | | | | | | | | | | |
| Married | 12 | 13 | 6 | 8 | 11 | 16 | 11 | 9 | 12 | 15 | 21 | 5 | 9 | 186 | 319 |
| Single | 24 | 29 | 20 | 21 | 29 | 39 | 34 | 35 | 20 | 25 | 30 | 38 | 25 | 367 | 704 |
| Widow | 7 | 2 | 4 | 6 | 7 | 1 | 3 | 3 | 1 | 2 | 2 | 4 | 4 | 45 | 83 |
| Widower | 1 | 2 | 5 | 1 | 1 | 1 | ... | 3 | 2 | 1 | 1 | 1 | ... | 17 | 54 |
| Total | 44 | 46 | 36 | 46 | 48 | 57 | 47 | 50 | 35 | 60 | 54 | 46 | 38 | 615 | 1145 |
| 1882. | | | | | | | | | | | | | | | |
| Married | 25 | 6 | 9 | 13 | 11 | 13 | 8 | 10 | 13 | 13 | 15 | 11 | 10 | 184 | 285 |
| Single | 27 | 31 | 20 | 19 | 37 | 36 | 31 | 31 | 34 | 25 | 31 | 24 | 20 | 295 | 668 |
| Widow | 4 | 1 | 4 | 4 | 4 | 6 | 9 | 2 | 6 | 5 | 5 | 5 | 9 | 44 | 704 |
| Widower | 1 | 1 | 1 | ... | 1 | ... | 4 | 2 | 3 | ... | ... | 2 | 1 | 14 | 30 |
| Total | 57 | 39 | 32 | 41 | 53 | 45 | 52 | 45 | 56 | 48 | 51 | 40 | 42 | 517 | 1085 |

SOCIAL RELATIONS.—Continued

| | Jan. | Feb. | March. | April. | May. | June. | July. | August. | Sept. | Oct. | Nov. | Dec. | Total White. | Total Colored. | Sum Total. |
|---------------|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------------|----------------|------------|
| | White. | White. | White. | White. | White. | White. | White. | White. | White. | White. | White. | White. | White. | White. | |
| 1893. | | | | | | | | | | | | | | | |
| Married | 28 | 8 | 24 | 14 | 16 | 10 | 9 | 17 | 7 | 13 | 9 | 12 | 15 | 16 | 321 |
| Single | 25 | 34 | 23 | 46 | 33 | 43 | 37 | 29 | 26 | 35 | 24 | 25 | 329 | 377 | 706 |
| Widow | 2 | 2 | 12 | .. | 3 | 12 | 2 | 9 | 2 | 6 | 2 | 4 | 53 | 54 | 114 |
| Widower | 3 | 1 | 1 | 3 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 3 | 23 | 11 | 34 |
| Total | 58 | 45 | 60 | 55 | 53 | 66 | 56 | 57 | 38 | 55 | 36 | 46 | 603 | 572 | 1175 |
| 1894. | | | | | | | | | | | | | | | |
| Married | 12 | 8 | 13 | 11 | 9 | 5 | 9 | 15 | 15 | 13 | 7 | 18 | 15 | 17 | 310 |
| Single | 23 | 22 | 18 | 27 | 22 | 32 | 35 | 43 | 28 | 29 | 30 | 25 | 24 | 26 | 686 |
| Widow | 5 | 5 | 3 | 7 | 8 | 7 | 6 | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 99 |
| Widower | .. | .. | 2 | .. | 2 | .. | .. | 2 | 3 | .. | 2 | 3 | .. | 4 | 31 |
| Total | 45 | 35 | 36 | 45 | 41 | 44 | 44 | 53 | 49 | 51 | 42 | 51 | 43 | 50 | 1106 |

[illegible]

NATIVITY.

33

1879.

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
| Nashville, Tenn. | 22 | 32 | 22 | 22 | 20 | 14 | 21 | 19 | 27 | 21 | 30 | 24 | 25 | 28 | 36 | 28 | 11 | 16 | 19 | 4 | 17 | 283 | 759 | 572 |
| Other United States | 5 | 9 | 4 | 4 | 2 | 6 | 1 | 6 | 5 | 2 | 1 | 2 | 1 | 4 | 1 | 1 | 7 | 3 | 2 | 0 | 3 | 44 | 37 | 81 |
| Canada | | | | | | | | | | | | | | | | | | | | | | | | |
| Germany | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 8 | 7 | 15 | |
| Ireland | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 4 | 2 | 2 | 1 | 12 | 10 | 22 | |
| Great Britain | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 1 | 5 | |
| Other Foreigners | | | | | | | | | | | | | | | | | | | | | | | 4 | |
| Total | 29 | 42 | 27 | 36 | 33 | 32 | 20 | 29 | 34 | 29 | 33 | 33 | 43 | 31 | 34 | 35 | 20 | 20 | 35 | 24 | 355 | 944 | 699 | |

1880.

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|
| Nashville, Tenn. | 16 | 30 | 36 | 27 | 22 | 23 | 24 | 27 | 52 | 45 | 57 | 45 | 57 | 41 | 29 | 19 | 24 | 21 | 22 | 21 | 34 | 30 | 353 | 376 | 732 |
| Other United States | 4 | 2 | 3 | 1 | 0 | 3 | 5 | 5 | 5 | 4 | 4 | 8 | 4 | 6 | 5 | 6 | 0 | 4 | 7 | 2 | 2 | 3 | 46 | 59 | 125 |
| Canada | | | | | | | | | | | | | | | | | | | | | | | | | |
| Germany | 1 | 1 | 3 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 2 | 1 | 1 | 4 | 2 | 1 | 3 | 2 | 1 | 8 | 8 | 11 | |
| Ireland | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 20 | 17 | 37 | |
| Great Britain | | | | | | | | | | | | | | | | | | | | | | 5 | 5 | 10 | |
| Other Foreigners | | | | | | | | | | | | | | | | | | | | | | 10 | 4 | 14 | |
| Total | 22 | 36 | 23 | 41 | 30 | 28 | 30 | 29 | 63 | 47 | 57 | 59 | 61 | 60 | 45 | 52 | 40 | 27 | 26 | 34 | 25 | 465 | 465 | 930 | |

1881.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|------|
| 1881. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nashville, Tenn. | 42 | 28 | 22 | 28 | 31 | 35 | 47 | 34 | 35 | 39 | 40 | 42 | 33 | 40 | 35 | 31 | 43 | 42 | 44 | 48 | 35 | 45 | 34 | 39 | 461 | 470 | 991 |
| Other parts of United States | 12 | 4 | 6 | 3 | 6 | 6 | 4 | 4 | 4 | 9 | 3 | 4 | 5 | 7 | 4 | 8 | 6 | 2 | 7 | 7 | 6 | 9 | 2 | 73 | 84 | 137 | |
| Canada | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Germany | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 13 | 5 | 18 | |
| Ireland | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 19 | 15 | 24 | |
| Great Britain | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 9 | 8 | 17 | |
| Other Foreigners | | | | | | | | | | | | | | | | | | | | | | | | 4 | 1 | 5 | |
| Total | 55 | 35 | 31 | 44 | 61 | 44 | 55 | 39 | 43 | 49 | 48 | 49 | 41 | 67 | 42 | 43 | 54 | 55 | 56 | 51 | 46 | 54 | 50 | 41 | 582 | 663 | 1445 |

NATIVITY.

| NATIVITY. | | | | | | | | | | | | | | | Total | | Total | |
|------------------------------|-----|-----|-----|-----|------|------|-----|-----|-----|-----|-----|-------|-------|-------|-------|--|-------|--|
| Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec | Total | Total | Total | Total | | | |
| 1882. | | | | | | | | | | | | | | | | | | |
| Nashville, Tenn. | | | | | | | | | | | | | | | | | | |
| Other parts of United States | | | | | | | | | | | | | | | | | | |
| Canada | | | | | | | | | | | | | | | | | | |
| Germany | | | | | | | | | | | | | | | | | | |
| Ireland | | | | | | | | | | | | | | | | | | |
| Great Britain | | | | | | | | | | | | | | | | | | |
| Other Foreigners | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | | |
| 1883. | | | | | | | | | | | | | | | | | | |
| Nashville, Tenn. | | | | | | | | | | | | | | | | | | |
| Other parts of United States | | | | | | | | | | | | | | | | | | |
| Canada | | | | | | | | | | | | | | | | | | |
| Germany | | | | | | | | | | | | | | | | | | |
| Ireland | | | | | | | | | | | | | | | | | | |
| Great Britain | | | | | | | | | | | | | | | | | | |
| Other Foreigners | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | | |
| 1884. | | | | | | | | | | | | | | | | | | |
| Nashville, Tenn. | | | | | | | | | | | | | | | | | | |
| Other parts of United States | | | | | | | | | | | | | | | | | | |
| Canada | | | | | | | | | | | | | | | | | | |
| Germany | | | | | | | | | | | | | | | | | | |
| Ireland | | | | | | | | | | | | | | | | | | |
| Great Britain | | | | | | | | | | | | | | | | | | |
| Other Foreigners | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | | |

Deaths by Wards.

| WARDS.
1879 | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total |
|--------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|-------|
| 1st Ward..... | ■ | 4 | 1 | 6 | 0 | 2 | 4 | 2 | ■ | 1 | 0 | 6 | 33 |
| 2d Ward..... | 7 | 7 | 4 | 8 | 2 | 2 | 4 | 1 | 6 | 7 | 5 | 4 | 57 |
| 3d Ward..... | 2 | 8 | 1 | 3 | 4 | 4 | 7 | 4 | 5 | 2 | 2 | 3 | 45 |
| 4th Ward..... | 7 | 9 | 10 | 9 | 9 | 5 | 10 | 7 | 7 | 3 | ■ | 5 | 84 |
| 5th Ward..... | 10 | 5 | 3 | 7 | 2 | ■ | 5 | 1 | 5 | 1 | 4 | 4 | 52 |
| 6th Ward..... | 12 | 9 | 14 | 11 | 7 | 8 | 14 | 12 | 12 | 7 | 5 | 13 | 125 |
| 7th Ward..... | 8 | 4 | 8 | 7 | 7 | 10 | 13 | 13 | 11 | 9 | 8 | 4 | 102 |
| 8th Ward..... | 6 | 3 | 8 | 2 | 10 | 7 | 9 | 8 | 7 | 7 | 2 | 4 | 74 |
| 9th Ward..... | 7 | 2 | 7 | 4 | 6 | 4 | 6 | ■ | 4 | 5 | 2 | 5 | 54 |
| 10th Ward..... | 6 | 3 | 8 | 6 | 2 | 6 | 4 | ■ | 9 | 7 | 6 | 6 | 73 |
| *11th Ward..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| *12th Ward..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| *13th Ward..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| *14th Ward..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| U. Hospital..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Coroner's inquest. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| State Prison..... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| | 71 | 54 | 64 | 63 | 49 | 53 | 76 | 58 | 68 | 49 | 40 | 54 | 609 |

*Before admission.

| WARDS.
1880 | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|--------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| 1st Ward..... | 1 | 1 | 2 | 2 | 2 | 5 | 1 | 4 | 0 | 4 | 2 | 0 | 24 |
| 2d Ward..... | 3 | 7 | 6 | 4 | 9 | 6 | 7 | 2 | 4 | 4 | 3 | 5 | 60 |
| 3d Ward..... | 4 | 6 | 4 | 5 | 2 | 10 | 9 | 2 | 4 | 4 | 2 | 6 | 58 |
| 4th Ward..... | 5 | 10 | 4 | 4 | 9 | 15 | 11 | 9 | 6 | 4 | 7 | 4 | 88 |
| 5th Ward..... | 3 | 7 | 3 | 4 | 4 | 8 | 8 | 5 | 2 | 6 | 2 | 4 | 56 |
| 6th Ward..... | 14 | 15 | 5 | 10 | 7 | 19 | 18 | 5 | 5 | 9 | 7 | 9 | 123 |
| 7th Ward..... | 10 | 5 | 6 | 7 | 5 | 13 | 7 | 12 | 5 | 5 | 7 | 8 | 90 |
| 8th Ward..... | 7 | 9 | 9 | 5 | 11 | 8 | 14 | 11 | 11 | 7 | 5 | 7 | 104 |
| 9th Ward..... | 3 | 3 | 3 | 2 | 5 | 6 | 7 | 14 | 3 | 3 | 3 | 4 | 56 |
| 10th Ward..... | 5 | 9 | 11 | 6 | 5 | 11 | 11 | 6 | 6 | 3 | 6 | 9 | 88 |
| 11th Ward..... | 0 | 0 | 4 | 1 | 2 | 3 | 3 | 5 | 4 | 4 | 0 | 1 | 27 |
| 12th Ward..... | 0 | 0 | 2 | 4 | 7 | 5 | 6 | 3 | 3 | 0 | 1 | 2 | 33 |
| 13th Ward..... | 0 | 0 | 1 | 3 | 5 | 5 | 7 | 8 | 3 | 4 | 1 | 3 | 40 |
| 14th Ward..... | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 1 | 1 | 2 | 4 | 20 |
| 15th Ward..... | ... | ... | ... | ... | ... | ... | 2 | 1 | 1 | 0 | 2 | 0 | 6 |
| U. Hospital..... | 0 | 7 | 0 | 2 | 1 | 1 | 6 | 5 | 5 | 2 | 3 | 7 | 39 |
| Coroner's inquest. | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 3 | 0 | 7 |
| State Prison..... | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 2 | 3 | 0 | 11 |
| Total..... | 55 | 79 | 60 | 59 | 74 | 115 | 126 | 98 | 67 | 65 | 59 | 73 | 930 |

Deaths by Wards.—Continued.

| WARDS.
1881 | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total..... |
|--------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|------------|
| 1st Ward..... | 3 | 6 | 1 | 1 | 2 | 3 | 1 | 3 | 1 | 3 | 1 | 0 | 25 |
| 2d Ward..... | 7 | 5 | 5 | 3 | 8 | 2 | 7 | 7 | 6 | 7 | 9 | 8 | 72 |
| 3d Ward..... | 6 | 7 | 6 | 3 | 4 | 5 | 2 | 3 | 8 | 12 | 8 | 4 | 68 |
| 4th Ward..... | 5 | 4 | 7 | 10 | 10 | 9 | 12 | 4 | 6 | 8 | 5 | 9 | 89 |
| 5th Ward..... | 4 | 3 | 4 | 5 | 3 | 2 | 6 | 1 | 1 | 8 | 5 | 5 | 45 |
| 6th Ward..... | 10 | 9 | 15 | 8 | 6 | 10 | 10 | 4 | 14 | 10 | 11 | 10 | 117 |
| 7th Ward..... | 8 | 4 | 9 | 10 | 16 | 9 | 13 | 15 | 12 | 13 | 13 | 10 | 132 |
| 8th Ward..... | 8 | 2 | 10 | 6 | 8 | 17 | 10 | 13 | 12 | 8 | 11 | 11 | 116 |
| 9th Ward..... | 7 | 3 | 5 | 4 | 5 | 6 | 10 | 8 | 8 | 3 | 6 | 4 | 67 |
| 10th Ward..... | 6 | 7 | 10 | 11 | 5 | 7 | 13 | 6 | 11 | 9 | 10 | 6 | 101 |
| 11th Ward..... | 5 | 0 | 0 | 1 | 2 | 3 | 3 | 4 | 3 | 5 | 4 | 7 | 37 |
| 12th Ward..... | 3 | 5 | 10 | 8 | 7 | 6 | 7 | 1 | 7 | 5 | 2 | 5 | 66 |
| 13th Ward..... | 6 | 1 | 7 | 7 | 4 | 8 | 3 | 5 | 7 | 6 | 2 | 4 | 61 |
| 14th Ward..... | 7 | 3 | 2 | 4 | 3 | 3 | 5 | 4 | 0 | 8 | 2 | 2 | 41 |
| 15th Ward..... | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| U. Hospital..... | 2 | 6 | 7 | 3 | 6 | 6 | 4 | 3 | 5 | 3 | 6 | 1 | 57 |
| Coroner's inquest. | 2 | 0 | 2 | 1 | 2 | 0 | 2 | 4 | 3 | 3 | 1 | 1 | 21 |
| State Prison..... | 1 | 0 | 2 | 4 | 2 | 1 | 2 | 1 | 5 | 0 | 4 | 4 | 26 |
| Total..... | 90 | 65 | 105 | 94 | 92 | 97 | 110 | 85 | 109 | 107 | 100 | 91 | 1145 |

| WARDS.
1882 | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|--------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| 1st Ward..... | 3 | 2 | 3 | 2 | 1 | 2 | 4 | 4 | 4 | 1 | 3 | 2 | 31 |
| 2d Ward..... | 11 | 5 | 4 | 2 | 5 | 4 | 2 | 4 | 4 | 6 | 6 | 4 | 57 |
| 3d Ward..... | 6 | 4 | 4 | 2 | 2 | 8 | 5 | 5 | 6 | 8 | 6 | 5 | 59 |
| 4th Ward..... | 9 | 6 | 7 | 10 | 6 | 12 | 8 | 10 | 10 | 6 | 8 | 9 | 103 |
| 5th Ward..... | 4 | 3 | 6 | 4 | 2 | 4 | 3 | 0 | 8 | 2 | 5 | 5 | 46 |
| 6th Ward..... | 9 | 2 | 12 | 5 | 11 | 12 | 12 | 10 | 9 | 6 | 9 | 9 | 106 |
| 7th Ward..... | 16 | 12 | 13 | 7 | 17 | 19 | 11 | 8 | 13 | 7 | 17 | 12 | 152 |
| 8th Ward..... | 8 | 7 | 5 | 9 | 5 | 6 | 11 | 11 | 8 | 5 | 5 | 3 | 86 |
| 9th Ward..... | 4 | 2 | 7 | 6 | 3 | 5 | 4 | 8 | 7 | 7 | 5 | 5 | 63 |
| 10th Ward..... | 5 | 4 | 8 | 5 | 7 | 6 | 18 | 14 | 9 | 8 | 7 | 10 | 101 |
| 11th Ward..... | 6 | 3 | 5 | 2 | 6 | 3 | 4 | 6 | 2 | 3 | 5 | 9 | 54 |
| 12th Ward..... | 8 | 3 | 5 | 5 | 6 | 4 | 7 | 3 | 4 | 8 | 4 | 7 | 64 |
| 13th Ward..... | 0 | 3 | 4 | 4 | 2 | 7 | 3 | 5 | 2 | 6 | 2 | 8 | 46 |
| 14th Ward..... | 0 | 1 | 2 | 1 | 2 | 2 | 2 | 4 | 1 | 2 | 0 | 0 | 17 |
| U. Hospital..... | 4 | 5 | 5 | 7 | 6 | 3 | 2 | 5 | 4 | 2 | 4 | 3 | 50 |
| Coroner's inquest. | 1 | 4 | 1 | 1 | 4 | 2 | 2 | 2 | 3 | 3 | 2 | 0 | 25 |
| State Prison..... | 2 | 4 | 2 | 2 | 3 | 0 | 4 | 2 | 3 | 0 | 3 | 0 | 25 |
| Total..... | 98 | 70 | 93 | 74 | 90 | 100 | 102 | 101 | 97 | 80 | 91 | 91 | 1085 |

Deaths by Wards.—Continued.

| WARDS.
1883 | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|--------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| 1st Ward..... | 1 | 0 | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | ■ | 20 |
| 2d Ward | 7 | 5 | 4 | 8 | 4 | 4 | 8 | 7 | 1 | 5 | 6 | 8 | 67 |
| 3d Ward..... | 5 | 7 | 11 | 6 | 7 | 4 | 5 | 3 | 2 | 3 | 5 | 10 | 68 |
| 4th Ward..... | 6 | 5 | 10 | 7 | 10 | 4 | 8 | 7 | 16 | 3 | 8 | 7 | 91 |
| 5th Ward..... | 2 | 2 | 9 | 3 | 6 | 9 | 5 | ■ | 1 | 3 | 4 | 2 | 49 |
| 6th Ward..... | 9 | 12 | 14 | 21 | 14 | 8 | 12 | 12 | 8 | 8 | 16 | 7 | 141 |
| 7th Ward..... | 14 | 12 | 13 | 16 | 24 | 16 | 19 | 8 | 12 | 6 | 11 | 12 | 163 |
| 8th Ward..... | 10 | 6 | 5 | 7 | 15 | 8 | 8 | 11 | 7 | 7 | 7 | 7 | 98 |
| 9th Ward..... | 5 | 7 | 7 | 3 | 3 | 6 | 7 | 4 | 5 | 6 | 4 | 8 | 65 |
| 10th Ward..... | 5 | 2 | 3 | 6 | 11 | 7 | 13 | 13 | 8 | 3 | 10 | 7 | 88 |
| 11th Ward..... | 7 | 8 | ■ | 8 | 3 | 6 | 9 | 2 | 0 | 4 | 4 | 3 | 57 |
| 12th Ward..... | 10 | 9 | 13 | 7 | 6 | 1 | 9 | 8 | 8 | 4 | 2 | 1 | 78 |
| 13th Ward..... | 6 | 3 | 5 | 6 | 3 | 4 | 7 | 6 | 8 | 2 | 2 | 7 | 59 |
| 14th Ward..... | 6 | 2 | 3 | 5 | 3 | 5 | 2 | 0 | 2 | 3 | 1 | 2 | 34 |
| U Hospital.. | 4 | 2 | 1 | 3 | 1 | ■ | 3 | 5 | 6 | 3 | 2 | 6 | 37 |
| Coroner's inquest. | 4 | 1 | 7 | 1 | 2 | 2 | 1 | 3 | 2 | ■ | 1 | 6 | 35 |
| State Prison..... | 2 | 2 | 2 | 1 | 5 | 2 | 2 | 1 | 3 | 3 | 1 | 1 | 25 |
| Total. | 103 | 85 | 113 | 111 | 119 | 88 | 119 | 95 | 91 | 70 | 86 | 95 | 1175 |

| WARDS.
1884 | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|--------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| 1st Ward..... | 3 | 2 | 2 | 0 | 0 | 1 | 3 | 2 | 1 | 2 | 2 | 1 | 19 |
| 2d Ward. | 11 | 9 | 2 | 5 | 5 | 4 | 3 | 5 | 1 | 2 | 3 | 1 | 51 |
| 3d Ward..... | 3 | 7 | 5 | 6 | 6 | 9 | 9 | 12 | 8 | 2 | 8 | 6 | 81 |
| 4th Ward..... | 4 | 7 | 4 | 9 | 11 | 5 | 11 | 6 | 3 | 5 | ■ | 9 | 83 |
| 5th Ward..... | 3 | 1 | 1 | 6 | 3 | 3 | 4 | 2 | 0 | 10 | 3 | 2 | 38 |
| 6th Ward..... | 8 | 5 | 15 | 11 | 8 | 16 | 18 | 18 | 9 | 8 | 5 | 13 | 136 |
| 7th Ward..... | 11 | 10 | 5 | 8 | 12 | 9 | 14 | 10 | 7 | 14 | 11 | 9 | 120 |
| 8th Ward..... | 6 | 7 | 7 | 6 | 5 | 6 | 8 | 12 | 17 | 8 | 7 | 5 | 94 |
| 9th Ward..... | 8 | 2 | 4 | 9 | 3 | 5 | 6 | 10 | 13 | 7 | 5 | 3 | 75 |
| 10th Ward | 10 | 8 | 10 | 9 | 4 | 9 | 9 | 5 | 8 | 6 | 11 | 11 | 98 |
| 11th Ward. | 3 | 7 | 5 | 9 | 4 | 2 | 6 | 6 | 4 | 5 | 3 | 6 | 60 |
| 12th Ward..... | 4 | 5 | 3 | 8 | 5 | 6 | 5 | 9 | 2 | 4 | 4 | 3 | 58 |
| 13th Ward..... | 3 | 3 | 6 | 2 | 3 | ■ | 8 | 5 | 4 | 10 | 6 | 1 | 55 |
| 14th Ward..... | 2 | 0 | 2 | 8 | 7 | 1 | 2 | 1 | 3 | 1 | 2 | ■ | 27 |
| U. Hospital.. | 3 | 3 | 6 | 3 | 3 | 6 | 6 | 6 | 4 | 5 | ■ | 6 | 56 |
| Coroner's inquest. | 5 | 3 | 3 | 2 | 3 | 1 | 6 | 3 | 3 | 3 | 3 | 4 | 39 |
| State Prison..... | 1 | 1 | 1 | 1 | 3 | 0 | 3 | 2 | 1 | 2 | 1 | 0 | 16 |
| | 88 | 80 | 81 | 97 | 85 | 89 | 121 | 114 | 91 | 94 | 83 | 83 | 1106 |

REPORT OF BIRTHS FOR 1883-84.

| | | JANUARY. | | FEBRUARY. | | MARCH. | | APRIL. | | MAY. | | JUNE. | |
|------|--------|----------|---------|-----------|---------|--------|---------|----------|---------|--------|---------|----------|---------|
| | | White. | | Colored. | | White. | | Colored. | | White. | | Colored. | |
| | | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. | Male. | Female. |
| 1888 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1889 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1890 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1891 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1892 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1893 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1894 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1895 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1896 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1897 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1898 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1899 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1900 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1901 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1902 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1903 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1904 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1905 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1906 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1907 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1908 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1909 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1910 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1911 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1912 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1913 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1914 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1915 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1916 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1917 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1918 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1919 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1920 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1921 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1922 | BIRTHS | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
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PREMATURE AND STILL BIRTHS FOR 1883-84.

| | Jan | Feb. | March. | April | May. | June | July. | August. | Sept. | October | Nov'br | Dec'br | Total Whites. | Total Colored. | Sum Total. |
|------------------|-----|------|--------|-------|------|------|-------|---------|-------|---------|--------|--------|---------------|----------------|------------|
| 1883. Immature | 3 | 1 | 1 | 2 | 2 | 3 | 1 | 0 | 1 | 1 | 1 | 3 | 17 | 12 | 29 |
| 1884. Still-born | 1 | 0 | 1 | 1 | 2 | 2 | 1 | 0 | 1 | 2 | 1 | 3 | 27 | 34 | 61 |
| 1884. Immature | 0 | 5 | 4 | 3 | 2 | 3 | 0 | 2 | 2 | 3 | 3 | 0 | 11 | 19 | 30 |
| 1884. Still-born | 3 | 3 | 1 | 2 | 1 | 3 | 1 | 1 | 1 | 0 | 1 | 2 | 34 | 31 | 65 |

Comparative Statement of the Death Rate of Nashville for Ten Years.

| | 1875. | 1876. | 1877. | 1878. | 1879. | 1880. | 1881. | 1882. | 1883. | 1884. |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| White..... | 25.78 | 26.31 | 21.82 | 17.43 | 20.26 | 19.98 | 20.63 | 17.82 | 18.68 | 16.77 |
| Colored..... | 49.69 | 45.35 | 38.72 | 33.50 | 35.92 | 36.47 | 32.87 | 35.50 | 31.29 | 26.94 |
| Total..... | 34.55 | 33.25 | 27.80 | 23.11 | 25.80 | 25.53 | 25.27 | 24.11 | 23.50 | 21.94 |

CLARKSVILLE.

CLARKSVILLE, TENN., Jan. 22, 1885.

J. B. LINDSLEY, M. D., *Secretary State Board of Health*

DEAR SIR — With a population of about seven thousand, including that of the immediate suburbs, and nearly one-half negroes, the almost proverbial healthfulness of this town was fully maintained during the last year. To whatever cause or causes its salubrity may be ascribed, a report upon its sanitary condition would be imperfect without some reference to a few of its leading features, and, first of all, to its

TOPOGRAPHY.

Including an area of about one and a half mile square within the charter limits, and located on Cumberland river, which forms its western boundary, and the Red river, which makes its eastern and northern lines, it is so nearly surrounded by these streams that all but one of its highways into the adjacent country are interrupted by bridge or ferry. Its elevation is more than five hundred feet above the sea level, and its surface is marked by high hills and ridges, depressions of various depth and circumference, and ravines. The hills are composed of limestone for their base, with red clay, gravel or soil superimposed. Many of the basins communicate directly, by natural openings, with subterranean streams or cavities, and these, together with the great ravines, the chief of which forms the south boundary of the town, lead into one or the other river, and thus afford a rapid and thorough

DRAINAGE

of nearly the entire surface. Besides these natural drains, there is about one mile of sewer, the main of which is twenty-four inch-tile pipe well glazed on both sides, the outfall into the Cumberland river being about one hundred and sixty feet below the highest points connecting therewith. Notwithstanding the excellent general drainage described, several large ponds exist within the town limits, all but one of which are surrounded by large areas of green sward, and are stocked with fish, and except that one, are not likely to become a nuisance for many years to come.

THE WATER SUPPLY

is derived from underground cisterns (eighteen to twenty-four feet deep, with a diameter of less than fourteen feet), one or more of which are attached to every residence and business house in the town, and filled with rain water collected from the roofs during the winter season. Only the chain elevator or windlass and bucket

are used for drawing from these cisterns, as the force pump does not sufficiently agitate and aerate the water to keep it sweet and potable. This is the drinking water of almost the entire population, a few negroes and fewer whites persisting in the use of spring water, of which there are several sources. We have also a public water-works, drawing its supply from Cumberland river, above the town, but this water is devoted to every other use than for drinking.

THE DISPOSABLE WASTE

and excrement, which demands more consideration from municipal authorities than any other hygienic measure, is in part accomplished here in a manner at once safe and unique. Several of the basins above mentioned, with free outlets, have been made to do service as sewers by some of the citizens, who have had their waste pipes extended into them, and others, by sinking a shaft until a cavity in the bed-rock is reached, have by this method utilized these natural conduits. Where the natural and artificial sewers described are inaccessible, the usual methods of the country are still employed. But the Board of Health has succeeded in abolishing the noxious privy vault, and are having the pail system substituted, using dry ashes or earth for the disinfectant. Wherever this plan is thoroughly practiced, it is believed to be equal if not superior to the best constructed water closet.

Very rarely has Clarksville been visited by any serious epidemic, except those which commonly affect children of tender years and we have not seen these characterized by the severity and fatality that are observed in many places. Cholera appeared in epidemic form the last time in the year 1849, and although about one hundred cases occurred, it was exclusively amongst the negroes, and equally imprudent and ignorant white people. Our exemption since that time has been generally attributed by our people to the pure soft water used for cooking and drinking. Whether this be true or not, it is intended with the breaking up of the present winter, that our sanitary force shall go to work and leave nothing undone to avert the much apprehended invasion by that scourge in the coming summer.

Last year we had to deal with nothing worthy of special remark, except a few cases of

SMALL-POX.

At several times during the last winter we had a single case to manage, each in the person of a strolling negro who had neither relative nor acquaintance to draw him hither. These gave us but

little trouble, until finally the head of a family, who was a prominent and popular negro, received the infection away from his home, but soon afterwards sickened, and before his physician had recognized the malady he had been visited by a large number of his people. In due time we had six distinct nidi from which the disease may have been propagated. The weather was so intensely cold that it was deemed to be downright inhumanity to remove them to hospital, three miles away. So from these several sources of contagion we had cases of—

| | |
|--|----|
| Variola..... | 20 |
| Varioloid..... | 11 |
| Persons domiciled with the sick and thereby exposed..... | 61 |
| Of these there were vaccinated previous to exposure..... | 36 |
| Not vaccinated previous to exposure..... | 25 |
| Had variola or varioloid previously to this exposure | 5 |

It will be seen that of the whole number of exposed persons, i. e., dwellers in the infected houses, after deducting the five who previously had variola or varioloid, there remain fifty-six to be accounted for, as follows, viz. the thirty-six who had been vaccinated before exposure escaped without one exception, the twenty-five who were unprotected when exposed, were immediately vaccinated, and of these eleven, or nearly one-half, got off with varioloid, whilst fourteen escaped both. Early in the spring of 1884 the Board of Health advised and the municipal authority promptly adopted and ordered a plan for the general compulsory vaccination of the people, which was undertaken by the medical men in the Board of Health and faithfully executed. To this measure, our escape from a contagion of epidemic proportions is doubtless due, and is an addition to the many thousands of facts which confirm our belief in the vaccine disease as a safe and sure prophylactic against small-pox. It may be well enough to say that for several years we have used none other than bovine virus, and since we have learned where to get it pure and fresh, we have seen no reason why humanized virus should be preferred. Doubtless much of the virus put in the market is worthless, or, worse still, is absolutely poisonous, because the points or quills are charged with blood and pus rather than with lymph. When charged with lymph they should look clean and as if they were glazed with colorless varnish, and we have had no untoward result from the application of pure lymph. All bloody or yellow points or quills should be rejected.

Very respectfully, etc.,

C. W. BEAUMONT, M. D., *Health Officer.*

MEMPHIS.

J. B. LINDSLEY, M. D. *Secretary State Board of Health :*

DEAR SIR:—Your circular letter of the 22d instant, to Hon. D. P. Hadden, President of the Legislative Council of this city, being referred to this office for reply, I have the honor to state, that the present Board of Health, composed of a President, Secretary, Health Officer, the Chief of Police and President of Legislative Council, member *ex-officio*, was organized in February, 1879. The President and Secretary are the only physicians connected with the Board. The organization was created by the legislative Act which formed the present Taxing District government. It has proven very satisfactory, and is as efficient as any similar organization in the country.

The Board has three sanitary officers, invested with regular police authority, who report to it daily, and who act in the capacity of Deputy Health Officers. Their pay is that of a patrolman of the police force, \$60 per month. In addition to these regular sanitary officers, the Police Department of the city co-operate with the Board.

The garbage service, under the immediate supervision of the Health Officer, is composed of 12 open carts, 4 air-tight sheet-iron carts, 20 mules and 17 men. The open carts are used to carry off street sweepings and all house-waste, such as dry garbage, ashes, sweepings of storehouses, in fact all house-waste that cannot be carried off by the sewers. The carts have their respective districts, and are required to make daily visits to all the houses. The sheet-iron carts are for the removal of night-soil from localities not yet sewered. This garbage and night-soil is thrown into the Mississippi river from a dump boat made especially for the purpose, and moored at the foot of Beale street, below the business portion of the city and steamboat landing. This dump-boat is under the immediate care of a keeper who sees to the dumping of all carts and their thorough cleansing before they return to the city, and reports monthly to the Board the number of loads dumped.

The monthly pay-roll of this service averages \$660, and that of the officers and sanitary police of the Board \$455 per month. The cost of the department annually, as shown by official report for the last two years, is \$24,840.36.

There are in successful operation thirty-seven miles of new sewers and thirty-six miles of subsoil drain, which, added to the old sewers built before the present system was adopted, make a total of forty-one miles (less a fraction) of sewers now in service, costing \$283,731.86.

This Board, since its organization, has had, in the spring, a thorough and general house to house and yard to yard inspection. This is independent of the daily inspection of the regular sanitary officer. In this special duty the Police Department actively co-operate with the sanitary officers of the Board.

On the announcement of the threatened visitation of cholera, last spring, the Board of Health issued a special circular of instruction in regard to drinking water, and required all suspected water to be analyzed. Such analysis was made by the Board of Health, and the water, where found impure, was condemned, and the owner required to clean out and, if necessary, re-cement the cistern. The use of all well water was discouraged by the Board, and in many cases it was abandoned. There is kept for gratuitous distribution the best disinfectants, as Platt's chlorides, sulphate of copper, etc., and all unsanitary places, as sinks, water-closets, etc., are disinfected. All infections and contagions are required by ordinance to be reported immediately to the Board of Health. The sanitary officer at once placards the house and leaves printed instructions for the prevention of the further spread of the disease. After the case is either disposed of by death or convalescence, the house is disinfected by sulphurous acid gas, under the immediate supervision of one of the sanitary officers of the Board.

By the enforcement of these preventive measures such infectious and contagious diseases as small pox, scarlet fever, diphtheria, etc., have been evaded only to a limited extent. All cases of small-pox, which cannot be properly isolated and treated at their homes, are promptly sent to the county small-pox hospital, four miles from the corporation limits, which is in charge of the county pest-house physician. The official record of last year shows the number of infectious and contagious diseases reported at the Health office as follows: Measles, 43; diphtheria, 33; scarlet fever, 72, and small-pox, 7.

This Board has had vaccinated, at a cost of \$550, persons to the number of 3 466, in the last two years.

In conclusion, I will affix the report of this office for the years 1883 and 1884, which embraces the work done and the total expenses of this department:

A Classified Statement of Expenditures for Board of Health and Sanitary Department, from December 1, 1882, to November 30, 1884.

| | |
|--------------------------------------|-------------|
| Pay-roll of the Board of Health..... | \$ 7,934 30 |
| Pay-roll of Sanitary force..... | 15,991 98 |
| Pay-roll of Sanitary Police..... | 2,159 66 |

| | |
|----------------------------------|-------------|
| Drugs for dispensary | \$ 777 84 |
| Stock and feed..... | 4,994 68 |
| Wagons and harness..... | 841 94 |
| Shoeing and wagon repairing..... | 2,108 95 |
| Stable and dump..... | 857 57 |
| Scavenger..... | 880 00 |
| Water..... | 10,500 00 |
| Printing and stationery | 412 29 |
| Fuel and ice | 74 11 |
| Quarantine..... | 1,407 12 |
| Public vaccination..... | 555 00 |
| Disinfectants..... | 26 38 |
| Repairing and plumbing..... | 32 90 |
| Telephone..... | 50 00 |
| Sanitary officers' badges | 6 00 |
| Sanitary Council..... | 71 00 |
| | <hr/> |
| | \$49,681 72 |

*A Classified Statement of Work done by the Board of Health
and Sanitary Police, from December 1, 1882, to No-
vember 30, 1884.*

| | |
|---|--------|
| Total number loads of garbage hauled to dump..... | 52,252 |
| Total number loads of dirt, bricks, rocks, etc., for street..... | 22,290 |
| Total number of earth boxes emptied at dump..... | 46,279 |
| Total number of dead dogs hauled to dump..... | 655 |
| Average number of men employed per month..... | 20 |
| Average number of mules employed per month..... | 20 |
| Average number of carts employed per month..... | 18 |
| Total number privy vaults emptied and filled by citizens..... | 57 |
| Total number privy vaults emptied by citizens..... | 434 |
| Total number unsanitary houses torn town by order of Board of
Health..... | 2 |
| Total number unsanitary houses repaired by order of the Board
of Health..... | 14 |
| Total number houses fumigated..... | 83 |
| Total inspections of premises made by sanitary police | 13,418 |
| Total number patients sent to hospital..... | 3,987 |
| Total number patients treated at dispensary..... | 7,958 |
| Total number persons vaccinated..... | 3,466 |
| Total number cases of small-pox sent to pest-house..... | 46 |
| Total number deaths in the city..... | 3,049 |

This reply takes more the shape of a report, but I trust it will not be too long, and will answer the purpose for which you design it.

Respectfully,

GEO. S. GRAVES, M. D.,
Sec'y Board of Health.

*Condensed Mortality Report for City of Memphis for 1880,
1881, 1882, 1883 and 1884.*

Compiled from published annual reports of the Memphis Board of Health for five years. For tabulated list of diseases, or more detailed information, see these reports.

MORTALITY REPORT FOR 1880—SECOND ANNUAL REPORT.

Total deaths for 1880, 1,054.

| Months. | White
Males. | White
Females. | Colored
Males. | Colored
Females. | Total. | Total
Whites. | Total
Colored. |
|---------------|-----------------|-------------------|-------------------|---------------------|--------|------------------|-------------------|
| February..... | 25 | 16 | 26 | 15 | 82 | 41 | 41 |
| March | 14 | 12 | 20 | 18 | 64 | 26 | 38 |
| April..... | 27 | 13 | 21 | 24 | 85 | 40 | 45 |
| May. | 16 | 14 | 26 | 18 | 74 | 30 | 44 |
| June..... | 20 | 14 | 30 | 21 | 85 | 34 | 51 |
| July..... | 27 | 20 | 32 | 26 | 105 | 47 | 58 |
| August..... | 24 | 13 | 25 | 17 | 79 | 37 | 42 |
| September... | 29 | 14 | 26 | 22 | 91 | 43 | 48 |
| October..... | 33 | 8 | 30 | 25 | 96 | 41 | 55 |
| November..... | 34 | 16 | 27 | 15 | 92 | 50 | 42 |
| December..... | 35 | 13 | 29 | 14 | 91 | 48 | 43 |
| January..... | 38 | 16 | 29 | 27 | 110 | 54 | 56 |
| Totals.... | 322 | 169 | 321 | 242 | 1054 | 491 | 563 |

DEATH RATE PER 1000 POPULATION.

Whites, 17,293; Colored, 16,707. Total, 34,000 in round numbers.

| TOTAL DEATHS. | | Proportion to
Population. | | Proportion to To-
tal Population. | | Total Proportion. |
|---------------|----------|------------------------------|----------|--------------------------------------|----------|-------------------|
| White. | Colored. | White. | Colored. | White. | Colored. | White and Color'd |
| 491 | 563 | 28.34 | 32.55 | 14.44 | 16.55 | 31.0 |

MORTALITY REPORT FOR 1881—THIRD ANNUAL REPORT.

Total deaths for 1881, 1,471.

| Months. | White Males. | White Females. | Colored Males. | Colored Females. | Total White. | Total Colored. | Grand Total. |
|----------------|--------------|----------------|----------------|------------------|--------------|----------------|--------------|
| January..... | 38 | 17 | 29 | 26 | 55 | 55 | 110 |
| February.. ... | 35 | 22 | 44 | 23 | 57 | 67 | 124 |
| March..... | 31 | 20 | 41 | 24 | 51 | 68 | 119 |
| April..... | 22 | 22 | 35 | 44 | 44 | 79 | 123 |
| May..... | 19 | 17 | 28 | 31 | 36 | 59 | 95 |
| June..... | 20 | 25 | 37 | 28 | 53 | 65 | 118 |
| July | 33 | 30 | 33 | 39 | 63 | 72 | 135 |
| August... .. | 34 | 32 | 31 | 36 | 66 | 64 | 130 |
| September.... | 36 | 31 | 40 | 43 | 72 | 83 | 155 |
| October. | 36 | 30 | 35 | 32 | 66 | 67 | 133 |
| November. ... | 30 | 26 | 39 | 35 | 56 | 74 | 130 |
| December. ... | 24 | 22 | 27 | 26 | 46 | 53 | 99 |
| Totals..... | 366 | 299 | 411 | 387 | 665 | 806 | 1471 |

DEATH RATE PER 1000 POPULATION.

United States Census of 1880, 34,000—Whites, 17,293; Colored, 16,707.

Total deaths for 1881, 1,471—Whites, 665; Colored, 806.

| Total Deaths. | | Proportion to Population. | | Population estimated at 40,000.* | | Proportion to 1000. | | Proportion total deaths to total population. | |
|---------------|-------|---------------------------|-------|----------------------------------|-----------------|---------------------------------------|--------------------------------|--|--|
| White | Col'd | White | Col'd | 22,000 White. | 18,000 Colored. | Population of 1880 U.S. cens., 34,000 | Population reckoned at 40,000. | | |
| 665 | 806 | 38.44 | 48.24 | 30.22 | 44.77 | 43.26 | 36.02 | | |

*Sholes' Directory for 1881 gives the population for city and immediate suburbs 46,000. We estimate it for city at 40,000.

MORTALITY REPORT FOR 1882—FOURTH ANNUAL REPORT.

| Months. | Under 1 year. | | From 1 to 5 years. | | From 5 to 15 years. | | From 15 to 25 years. | | From 25 to 50 years. | | From 50 to 75 years. | | Over 75 years. | | Total. | |
|----------------|---------------|-----|--------------------|-----|---------------------|----|----------------------|-----|----------------------|-----|----------------------|----|----------------|----|--------|-----|
| | W | C | W | C | W | C | W | C | W | C | W | C | W | C | W | C |
| January..... | 5 | 8 | 2 | 8 | 2 | 1 | 4 | 12 | 23 | 16 | 7 | 7 | 2 | 2 | 46 | 54 |
| February..... | 4 | 12 | 3 | 7 | 1 | 3 | 6 | 10 | 8 | 17 | 4 | 0 | 2 | 1 | 27 | 30 |
| March..... | 6 | 18 | 1 | 10 | 0 | 6 | 1 | 10 | 14 | 16 | 3 | 3 | 0 | 1 | 25 | 34 |
| April..... | 6 | 6 | 1 | 12 | 1 | 9 | 2 | 14 | 14 | 19 | 4 | 1 | 1 | 1 | 29 | 31 |
| May..... | 4 | 14 | 1 | 15 | 3 | 4 | 2 | 2 | 14 | 27 | 3 | 4 | 1 | 2 | 28 | 33 |
| June..... | 5 | 18 | 2 | 4 | 1 | 3 | 7 | 7 | 11 | 22 | 3 | 7 | 1 | 2 | 30 | 33 |
| July..... | 8 | 16 | 1 | 13 | 3 | 0 | 1 | 9 | 7 | 15 | 5 | 7 | 0 | 1 | 25 | 31 |
| August..... | 6 | 19 | 2 | 17 | 3 | 4 | 3 | 9 | 11 | 11 | 5 | 2 | 0 | 1 | 30 | 36 |
| September..... | 6 | 15 | 2 | 13 | 4 | 2 | 2 | 16 | 11 | 7 | 6 | 2 | 0 | 0 | 31 | 35 |
| October..... | 8 | 8 | 7 | 15 | 1 | 3 | 7 | 3 | 21 | 13 | 6 | 6 | 1 | 0 | 53 | 50 |
| November..... | 11 | 12 | 4 | 13 | 2 | 5 | 4 | 5 | 15 | 22 | 7 | 2 | 0 | 2 | 43 | 51 |
| December..... | 5 | 7 | 4 | 10 | 4 | 4 | 3 | 12 | 25 | 13 | 10 | 5 | 2 | 0 | 53 | 51 |
| Totals..... | 74 | 152 | 30 | 137 | 26 | 44 | 41 | 109 | 174 | 198 | 65 | 48 | 10 | 12 | 420 | 701 |

DEATH RATE PER 1000 POPULATION.

United States Census of 1880, 33,593—Whites, 18,622; Colored, 14,971
Total deaths for 1882, 1121—Whites, 420, Colored, 701.

| Total Deaths. | | Proportion to Population. | | Population estimated at 46,014*
Proportion to 1000. | | Proportion of total deaths to total population. | |
|---------------|---------|---------------------------|----------|--|----------------|---|------------------------------|
| White. | Colored | White. | Colored. | 28,273 White | 17,741 Colored | Pop. 1880 U. S. Cen. reckon'd at 33,593. | Popula'n reckon'd at 46,014. |
| 420 | 701 | 22.55 | 46.82 | 14.85 | 39.45 | 33.37 | 24.36 |

*Sholes' Directory for 1882, gives population in city limits 46,014; city and immediate suburbs, 50,203.

MORTALITY REPORT FOR 1883—FIFTH ANNUAL REPORT.

Total deaths, 1,403.

| Months. | Under 1 year. | | From 1 to 5 years. | | From 5 to 15 years. | | From 15 to 25 years. | | From 25 to 50 years. | | From 50 to 75 years. | | Over 75 years. | | Total. | |
|-----------|---------------|-----|--------------------|-----|---------------------|----|----------------------|-----|----------------------|-----|----------------------|----|----------------|----|--------|-----|
| | W | C | W | C | W | C | W | C | W | C | W | C | W | C | W | C |
| January | 7 | 1 | 6 | 11 | 2 | 4 | 8 | 10 | 28 | 20 | 14 | 13 | 1 | 2 | 66 | 71 |
| February | 4 | 15 | 3 | 10 | 2 | 2 | 1 | 10 | 25 | 14 | 12 | 4 | 3 | 2 | 50 | 57 |
| March | 6 | 12 | 7 | 13 | 1 | 3 | 12 | 13 | 16 | 25 | 10 | 6 | 2 | 2 | 56 | 74 |
| April | 7 | 9 | 8 | 3 | 4 | 4 | 7 | 10 | 14 | 17 | 11 | 2 | 4 | 4 | 42 | 54 |
| May | 6 | 12 | 7 | 2 | 4 | 4 | 2 | 6 | 15 | 15 | 6 | 7 | 1 | 1 | 31 | 51 |
| June | 14 | 19 | 4 | 4 | 1 | 3 | 3 | 5 | 11 | 19 | 7 | 12 | 2 | 2 | 40 | 64 |
| July | 9 | 19 | 4 | 19 | 3 | 3 | 5 | 9 | 15 | 12 | 13 | 4 | 1 | 1 | 46 | 67 |
| August | 14 | 18 | 7 | 14 | 8 | 6 | 7 | 10 | 17 | 16 | 8 | 7 | 1 | 1 | 61 | 71 |
| September | 11 | 16 | 11 | 16 | 2 | 5 | 3 | 9 | 14 | 16 | 12 | 10 | 4 | 4 | 53 | 76 |
| October | 4 | 12 | 7 | 13 | 3 | 4 | 7 | 13 | 26 | 18 | 4 | 7 | 2 | 2 | 53 | 69 |
| November | 4 | 12 | 7 | 10 | 7 | 7 | 8 | 12 | 23 | 19 | 14 | 4 | 1 | 1 | 58 | 65 |
| December | 5 | 20 | 2 | 8 | 1 | 4 | 8 | 16 | 26 | 24 | 13 | 1 | 1 | 2 | 56 | 74 |
| Totals | 98 | 175 | 58 | 133 | 25 | 49 | 71 | 123 | 230 | 215 | 124 | 76 | 9 | 22 | 610 | 793 |

DEATH RATE PER 1000 POPULATION.

United States Census of 1880, 33,593—Whites, 18,622; Colored, 14,971.
Total deaths for 1883, 1,403—Whites, 610; Colored, 793.

| Total Deaths. | | Proportion to population. | | Population estimated at 62,335*
Proportion to 1000. | | Proportion of total deaths to total population. | |
|---------------|---------|---------------------------|---------|--|-----------------|---|--------------------------------|
| White. | Colored | White. | Colored | 40,207 White. | 22,128 Colored. | Population of 1883 U. S. Census, 33,593. | Population reckoned at 62,335. |
| 610 | 793 | 32.75 | 52.96 | 15.19 | 35.83 | 41.76 | 22.50 |

*Sholes' Directory for 1884, gives population in city limits, 17,810. Multiplying the names given by 3½ would give 62,335—this being the smallest multiple used in making an estimate from a Business Directory.

MORTALITY REPORT FOR 1884—SIXTH ANNUAL REPORT.

| Month. | Under 1 year. | | From 1 to 5 years. | | From 5 to 15 years. | | From 15 to 25 years. | | From 25 to 50 years. | | From 50 to 75 years. | | Over 75 years. | | Total. | |
|----------|---------------|-----|--------------------|-----|---------------------|----|----------------------|-----|----------------------|-----|----------------------|-----|----------------|----|--------|-----|
| | W | C | W | C | W | C | W | C | W | C | W | C | W | C | W | C |
| Jan'y. | 8 | 22 | 5 | 19 | 5 | 5 | 17 | 16 | 23 | 32 | 10 | 17 | 4 | 1 | 72 | 112 |
| Feb.... | 7 | 15 | 8 | 8 | 4 | 3 | 6 | 11 | 19 | 25 | 12 | 5 | — | 3 | 56 | 70 |
| March | 7 | 19 | 4 | 9 | — | 16 | 6 | 10 | 20 | 25 | 11 | 8 | — | 3 | 48 | 90 |
| April... | 9 | 18 | 5 | 13 | 2 | 3 | 6 | 12 | 14 | 19 | 9 | 11 | 1 | 1 | 46 | 77 |
| May.... | 5 | 11 | 3 | 5 | 4 | 5 | 2 | 7 | 15 | 18 | 10 | 6 | — | 1 | 39 | 53 |
| June.... | 23 | 15 | 2 | 19 | 3 | 9 | 3 | 6 | 19 | 10 | 7 | 7 | 1 | 2 | 58 | 58 |
| July ... | 6 | 24 | 5 | 12 | 1 | 9 | 7 | 7 | 20 | 19 | 9 | 7 | 2 | — | 50 | 78 |
| August | 8 | 15 | 9 | 19 | 8 | 6 | 11 | 15 | 15 | 11 | 8 | 6 | 2 | 4 | 61 | 76 |
| Sept ... | 9 | 16 | 9 | 19 | 3 | 11 | 9 | 3 | 40 | 19 | 12 | 12 | 2 | — | 85 | 80 |
| Octob'r | 13 | 7 | 9 | 31 | 4 | 8 | 12 | 10 | 37 | 20 | 15 | 14 | 1 | 2 | 91 | 92 |
| Nov. ... | 4 | 13 | 8 | 10 | 2 | 4 | 11 | 10 | 39 | 17 | 14 | 9 | 2 | 3 | 80 | 66 |
| Dec. ... | 9 | 11 | 5 | 6 | — | 2 | 6 | 11 | 35 | 37 | 13 | 5 | 2 | 2 | 70 | 69 |
| Total | 108 | 186 | 72 | 160 | 36 | 81 | 96 | 118 | 297 | 247 | 180 | 107 | 17 | 22 | 756 | 921 |

DEATH RATE PER ONE THOUSAND POPULATION.

Census of 1883, compiled from Sholes' Directory of Memphis, 62,335—
 Whites 40,207; Colored 22,128. Total Deaths for 1884,
 1,677—Whites 756; Colored 921.

Deaths. Rate to 1000 population. Rate to 1000 population. Ratio based on U. S. Census of 1880, 33,593—
 White 18,622; Colored 14,971.

| White. | Colored. | White. | Colored. | White and Colored. | Died White. | Died Colored. | Ratio White. | Ratio Colored. | White and Colored. |
|--------|----------|--------|----------|--------------------|-------------|---------------|--------------|----------------|--------------------|
| 756 | 921 | 18.80 | 41.66 | 28.90 | 756 | 921 | 40.59 | 61.51 | 49.90 |

DAVIDSON COUNTY.

J. B. LINDSLEY, M. D., *Secretary State Board of Health.*

DEAR SIR:—Some time during the latter part of last summer I received a communication from you, directing me to carry out, as Health Officer of Davidson county, certain instructions therein contained, pertaining to the proper management of diphtheria and scarlet fever, diseases which were in existence at that time—the former of which is still occasionally reported as being present in our community. In that communication I was instructed to see that the premises where such diseases were known to exist should be placarded, "Diphtheria Here" "Scarlet Fever Here" and that I should personally see that such premises were properly disinfected and fumigated. It was apparent that in order to carry out said instructions it was necessary to have both men and money. Should the diseases become widespread. Hence, having neither at my disposal, at the October term of the Davidson County Court I brought the whole subject before it for consideration, and after full discussion, it was decided to make no appropriation for that purpose, and so the subject ended.

But nevertheless I had letters prepared and mailed to all the physicians in the city and county, in accordance with that communication, asking them to report to me the name, age, sex, color, place, civil district, etc., in answer to which, during the months of September, October, and three days of November, there were reported to me fifty cases of diphtheria and two of scarlet fever in Davidson county, as follows: 10th district, 2, 13th district 4, 18th district 24, 12th district, 2, 8th district, 2, 19th district, 2; 19th district, 1, 20th district, 1, unknown districts, 12. Of these, there were, colored 16, white, 14; unknown color, 20, male 15, female, 17, unknown sex, 18, minors, 34, adults, 3, unknown age, 13.

These reports, though imperfect, will show that some of us have endeavored to comply with your request. We can but believe, from the responses and assurances from the physicians in the city and county, that, had the court seen fit to co-operate with the State Board of Health, we would have succeeded in securing very satisfactory and valuable information, by this time, upon these important subjects.

Allow me to add, that my experience as Health Officer induces me to say, some wise laws should be enacted by the present Legislature looking to a more thorough definition of the duties of County Health Officers, and more certain protection of the people against the invasion of all contagious and epidemic diseases. None know, however, what our necessities are better than your honorable Board,

nor are able to accomplish more upon the subject before the General Assembly, and we trust you will not allow it to escape your attention in your deliberations to-day.

Respectfully submitted.

W. C. COOK, M. D.,
Davidson County Health Officer.

SHELBY COUNTY.

J. B. LINDSLEY, M. D., *Secretary State Board of Health :*

DEAR SIR:—In accordance with the provisions of section 2, chapter 233, page 311, Acts of Tennessee, 1883, which requires "that the County Jail Physician shall be *ex officio* the County Health Officer," etc., I have the honor to herewith submit to your honorable body the initial report of the several county institutions of Shelby county, together with a few remarks that may be deemed pertinent to the legitimate channels of the State Board of Health. It has been the aim of the writer, in compiling this report, to give you material information and to avoid unnecessary collateral issues.

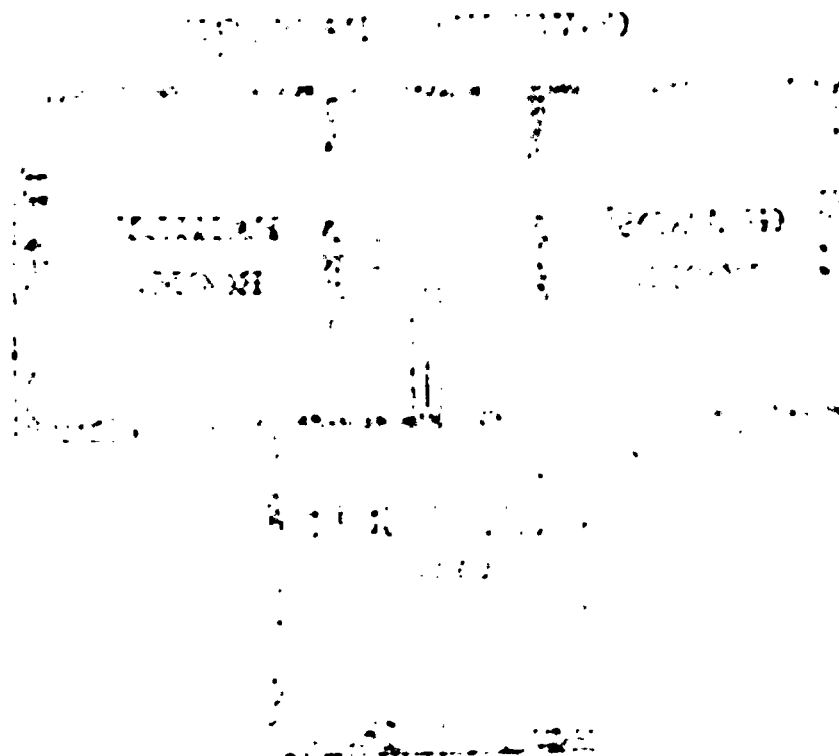
Shelby county boasts of four institutions that I do not think are equaled by any of the sister counties of Tennessee. Although unable to furnish specific comparative data in substantiation of this claim, the force of the assertion will doubtless be fully recognized by the members of the State Board.

SHELBY COUNTY WORKHOUSE.

The Shelby county Workhouse is located on the Poorhouse farm, eighty-five acres in area, four miles east of the city limits of Memphis. This workhouse is composed of three separate buildings, viz.: the male prison ward, the female prison ward, and superintendent's house, all of which are connected by a covered passageway. Ground was first broken for these buildings during the month of August last, and the work was practically completed within the past ten days. The cost is estimated at \$15,000. The relation of the three buildings to each other is fully shown in the accompanying sketch.

The material used in the construction of the male prison ward is wood. The outside walls, together with the partition walls of the cells and corridor, are 2½x6 timbers, alternate oak and yellow pine, laminated, that is, laid flat, one on top of another, and strongly spiked and bolted together, thus making a solid and compact wooden

REPORT OF THE



located, by extending the soil pipes up above the roofs, and preventing the escape of noxious gases into the building.



piked and bolted together, thus making a solid and compact wooden

wall, 6 inches thick, resting on solid brick foundation walls. The floors and ceilings of the cells are constructed in a similar manner. This building is 38x68 feet, having a hall or corridor, 12 feet wide, running through the center, with two tiers or stories of cells on either side. On the lower floor are 8 cells, 8x12 feet, on each side, while the upper tier contains 4 cells to a side, 12x16 feet in dimension, all 8 feet high in the clear.

For light and ventilation the lower cells are provided with a strong iron-grated window, 2 ft. 2 in. by 4 ft. to each, opening outside. The large cells above have each 2 grated windows of the same dimensions as those on the lower floor, besides the iron-grated door, 2 ft. 6 in. by 6 ft. 6 in., opening into the corridor. This corridor extends along the entire length of the building, dividing the cells on both the upper and lower tiers, and extends above the roof proper, thus forming a clear story or ventilator, with grated openings at the sides and ends for light and ventilation. In addition, there are two windows at each end of the corridor. It will thus be apparent that the facilities for light and ventilation are ample and sufficient. The floor of the corridor is composed of concrete and brick laid in cement.

The water-closets and bath-room are located at the end of the corridor, with entrances from the same on the first floor. Over these retiring rooms is a large water tank, which receives the rain-water from the roof, and, when necessary, can be supplied from a well outside, by means of a force-pump, operated by the prisoners, or a wind-mill, if desired. Having an abundance of labor, there will be no difficulty in keeping an ample supply of water for all purposes.

Sewerage.—A system of drain pipes, connecting with the water closets and bath-rooms of both the male and female wards, is joined at the center of the buildings from whence it extends some three hundred yards from the establishment, and empties into a pit or basin, with an overflow into a trench or drain. Into this pit or basin will be deposited the excrement, etc., from the prisoners, and into this it is proposed to throw at intervals a sufficient quantity of lime or other matter to deodorize or destroy noxious gases and disagreeable odors, and, at the same time, make a valuable fertilizer, which will be removed each fall or spring, or oftener if found necessary. Into this drain or sewer will be trapped, not only the water-closets, bath-rooms, etc., but inlets from the corridor floors will admit the washings from the cells and corridors. This sewer pipe will be ventilated at the upper ends, where the water closets are located, by extending the soil pipes up above the roofs, and preventing the escape of noxious gases into the building.

Heating.—For heating this ward two large stoves, placed in pits two feet below the level of the floor, have been placed in the corridor. The stoves are strongly secured with iron rods and bolts. The pipes of heavy sheet-iron are encased with a large ventilating flue extending out above the roof, acting not only as a ventilating shaft, but making a safe protection against fire. In order to allow a free circulation of heat and air between the corridor and cells, there are, in addition to the grated iron doors, open spaces in the partition walls, made by cutting out alternate pieces of the timber forming the partitions. The openings are made secure by a sufficient number of iron bars placed in a perpendicular position.

This ward will accommodate about 120 prisoners comfortably, four in each of the small cells, and eight in each of the large ones.

The Executive, or Superintendent's building, is midway between the male and female wards, and is a handsome, substantial and convenient structure of brick, two stories high, with a tin roof. It contains three rooms on each floor, guard room, office, and rooms for storing necessary supplies and implements.

The female ward is built of brick, and is 40x72 feet. Upon entering this ward the dining-room is encountered, and at once strikes the visitor with its admirable proportions. It ranges from one side of the building, and is sufficiently deep. Directly to the rear of the dining-room are the kitchen and store-room, with the female ward occupying the balance of space to the extreme end of the building. This ward needs no special description. The rooms are spacious and lofty, well lighted and ventilated. It is constructed in a manner not materially different from the male ward, and is lighted, heated and ventilated in the same manner. It contains four cells, 12x12 feet, in two tiers, two above and two below; each cell contains two iron-grated windows, 2 ft. 2 in., by 4 ft., and one iron-grated door, opening into a large room or corridor, 20x24 feet, with a concrete floor. This corridor is lighted and ventilated by eight iron-grated windows, 2 ft. 2 in., by 4 feet; also, one grated door with a ventilator, 12x10 feet on top, constructed like the one described in the male prison ward. The water-closets, bath-room, drainage, sewerage and heating arrangements in the female prison are the same as those mentioned in the male ward. The whole may be readily understood by consulting the accompanying sketch.

POOR AND INSANE ASYLUM OF SHELBY COUNTY.

The above institution is situated on the Raleigh road, four miles from Memphis, on the same county property whereon the workhouse is located. The building was erected in 1880, at a cost of \$40,000, and is an elegant brick structure, of a central portion 50 feet square,

three stories high, and contains fifteen rooms, 15x16 feet, with a front hall 15 feet wide, and a cross hall 50x10 feet. Two wings, of two stories each, are included in the structure, and contain four wards, 50x24 feet each, with ceilings 12 feet high. There is also an L, containing one ward, 30x55 feet, with two adjoining rooms, 18x24 feet, on the second floor. The first floor contains two dining-rooms, 50x15 feet; also a kitchen and private dining-room, the latter 18x24 feet, and 12 feet high. A basement runs under the entire L. The roofing is all of tin. In the matter of light and ventilation, superior advantages have been secured. The five large wards have fourteen windows each, while the small rooms have an average of three windows.

The insane department consists of a central brick building, one story high, with two wings made of wood. The brick building contains three rooms, the largest being 18x20 feet, with four windows, and an equal number of doors. The small rooms are 8x12 each, and one window is allotted to each room. The first wing measures 50x26 feet, and has ten cells, five on either side of a 6-foot (wide) hallway. The cells are 7x10 feet, and are provided with a window, door and wire-screen ventilators. Wing No. 2 is 70x15 feet, and is divided into two rooms—one 40x15 feet, and the other 30x15 feet, with an ample number of windows. The males and females are entirely separate, and the building is enclosed with a high picket fence. The outbuilding, containing four large and two small water-closets, and four bath-rooms, is made of brick. Two iron tanks, 12x20 feet and 5 feet high, with a capacity of 1,000 barrels of water are erected over the bath and retiring-rooms. The water supply is obtained through the medium of a wind mill. The main sewer empties into a running stream of water, one-quarter of a mile from the building. The asylum is also provided with a large wash-house, stables, and all necessary outbuildings. For the past twelve years this institution has been under the efficient care of that admirable gentleman and physician, Dr. George K. Duncan. There are now 104 sane and 83 insane inmates of the asylum.

SHELBY COUNTY JAIL.

To this magnificent and imposing structure of stone and brick, with its turrets, massive walls, grand façade, barred windows, and general solidity of structure, together with its architectural consistency, the people of Shelby county point with pride. It is at once grim and grand, and the stoutest heart might well relinquish hope of escape from within its portals. This building was finished about the year 1867, and cost close in the neighborhood of \$200,000. It affords ample accommodation for upwards of one hundred and

seventy-five prisoners. The ponderous iron gate, the height of the surrounding walls, admits the visitor to the yard, from whence one passes under a large archway and is ushered into a rotunda of vast proportions, on either side of which may be found the office, dispensary, reception-room and general store-room. At the end of this rotunda is the partition of heavy iron bars, separating the tier of cells and prisoners' corridors from the more congenial atmosphere of the rotunda. On either side of the massive doorway leading to the prisoners' quarters, is a spiral iron stairway leading to the second or upper story, where the rooms set apart for hospital service are located. To this department prisoners dangerously ill are immediately removed from the jail proper until their recovery is assured. The second story is also utilized as sleeping-rooms for the officials on duty at night, as well as for the storage of clothing, etc., for work-house prisoners.

The jail proper is an iron structure within the main building. Length, seventy-five feet; width, about twenty-five feet; height, thirty-five feet, having four stories or tiers, of twenty cells each, ten cells on each side of a corridor six feet wide, from which access is obtained to the cells, which are provided with double bunks, one above the other. The dimensions of the cells are as follows: Eight feet high, seven feet long and seven feet wide, each provided with a barred-window four and one-half feet by three feet, as well as top and bottom ventilators at the door. Seventeen windows in the brick walls afford ample light and ventilation. The sanitary measures are most complete. Each cell is provided with running water, also, a water closet. The corridors on each tier or floor are laid with grated iron, thus securing ample ventilation and absolute cleanliness. The building is heated by steam, and is at all times most comfortable. Bath-rooms are provided, to which prisoners at all times have access. On the ground floor is a corridor or gallery one hundred feet long and nine feet wide, on both sides of the building, which affords ample room for exercise, a privilege extended to all prisoners between the hours of 7 a.m. and 9 p.m.

The kitchen is situated immediately under the floor of the rotunda, and is in every respect ample and commodious.

The discipline of the jail, under the able supervision of that courteous official, Mr. W. S. Lawless, is excellent. Good, wholesome food is served the prisoners, and in fact the jail and its management is all that could be desired in every respect. For the past year the county convicts have been engaged in repairing old and grading new roads in the immediate neighborhood of the city, and have rendered lasting and substantial services. The County Court

have never failed to generously respond to any call made upon them of a financial nature necessary to the successful management of the institution.

The general health of the inmates has been exceedingly good, and, save the fact that dysentery prevailed to some extent during the summer months, there has been no serious sickness during the year, but two deaths having occurred, one from malarial fever, the other resulting from the effect of injuries received by the prisoner prior to his reception at the jail.

THE SHELBY COUNTY PEST-HOUSE

is situated three miles south of Memphis city limits. To this institution all small-pox patients who are unable to command proper attention elsewhere are sent, also, when they are unable or unwilling to isolate themselves. The main building is a two story frame, with a capacity for twenty patients. The institution is also provided with all necessary out-buildings, boilers, heaters, etc., for thoroughly disinfecting all clothing taken from the place. This pest-house or small-pox hospital was purchased, with the fifty acres on which it is situated, in 1867. The institution is void of patients at present.

Small-pox made its appearance in the sixth civil district, five miles from the city, on the Randolph road, in December, 1882. Eleven cases occurred in all, the disease being finally stamped out by isolating the sick and nurses, and vaccinating all who had been exposed. Five cases occurred just south of the city limits in March, 1884, all of which were promptly removed to the small-pox hospital, the buildings at once thoroughly fumigated and the disease promptly checked.

It is my opinion that the next Legislature should be urged to pass a law making vaccination compulsory in all cases where the party has been exposed to small-pox.

Scarlet Fever and *Diphtheria* made their appearance in two or three country localities during the past fall, but as the disease in each instance was very mild, it caused but little alarm, and was not reported to this office.

In conclusion, gentlemen, I think it the bounden duty of every reputable physician to urge the enactment of a State law providing for the appointment of a board or corps of State examiners who will allow no one to enter or practice the noble profession of medicine without first giving ample proof of possessing the necessary qualifications. It is useless for me to ventilate my views further on this subject, as your honorable body are fully aware of the many abuses, if not crimes, that are cloaked under the self-bestowed title

or prefix of "Doctor." One of the leading members of the legal fraternity of Memphis said to me, the other day, while conversing on this subject, "Doctor, we ought to have some kind of a law framed to put down the quacks. Now, we lawyers have to pass an examination, and we only get a chance at people's pocket-books, whereas, your profession is interested in a man's vitals. Now, I would rather lose all my property to-day than one-quarter of my life, and the only way to preserve the latter is to put down creatures who flaunt a 'Dr.' in your face, and whom nature intended as able-bodied coal heavers." I agree with the legal gentleman, and think this subject should be given profound attention.

All of which is respectfully submitted.

H. L. WILLIFORD, M.D.,
Health Officer for Shelby County.

MEMPHIS, Dec. 1, 1884.

ADDITIONS TO THE LIBRARY

SINCE LAST REPORT, BY PURCHASE OR GIFT.

- A New Form of Nervous Disease By W. S. Searle, A. M., M. D.
A Report of the National Board of Health, 1880. Donor A. J. Caldwell.
Acts of the General Assembly of Tennessee for 1883
Address by Dr. Gattinger on the Flora of Tennessee.
Address on State Medicine By Dr. D. J. Roberts.
Air and Rain. By Smith R. Angis.
Alcohol—Its Place and Power. By James Miller.
Animal Plagues—Their History, Nature and Prevention. By George Fleming, F. R. C. V. S., F. R. G. S., etc., in 2 vols.
Annual Report of the Chief Signal Officer of the U. S. for 1880.
Annual Report Health Officer District Columbia, 1883.
Annual Report of the Surgeon-General U. S. A., 1883.
Annual Report of the State Board of Michigan, 1883—2 copies.
Asiatic Cholera. By F. A. Burrall, M. D.
Avoidable Causes of Diseases. By John Ellis, M. D.
Bible Hygiene, or Health Hints. By a Physician.
Biennial Report Memphis Commissioners, and Maps.
Biennial Report Taxing District (Memphis), 1884. By the Council.
Blanks, Forms, etc., complete set, Health Department, 1884. Donor, Health Department City of New York.
Chemical and Physical Analyses of Milk, Condensed Milk, and Infants' Milk Foods. By D. Nicholas Gerber.
Cholera Epidemics in East Africa By Jas. Christie, A. M., M. D.
Circular of Information, No. 2, of the Bureau of Education of the United States.
Circular of National Bureau of Education on New Orleans Exposition.
Circular of Information, U. S. Bureau of Education, No. 4, 1884. The Bureau.
Circular of Information, U. S. Bureau of Education, No. 5, 1884. The Bureau.
Coffee, from Plantation to Cup. By Francis B. Thurber.

- Consumption. By Edward Smith, M. D.
- Dangers to Health. By Q. Pridgin Teale, M. D.
- Disease. By James H. Bennett, M. D.
- Diseases of Memory. By Th. Ribot.
- Documents Sanitary Pro. Association Newport, R. I. By Dr. H. R. Storer.
- Dwelling-houses, their Sanitary Construction and Arrangements. By W. H. Corfield, A. M., M. D.
- Eleventh Annual Report New Haven Board of Health, 1883.
- Eleventh Annual Report State Board of Health of Michigan, 1883. The Board.
- Eruptive Fevers. By George Gregory, M. D.
- Fat and Blood, and How to Make Them. By S. Weir Mitchell.
- Fifth Annual Report of the Kentucky State Board of Health.
- Fifth Annual Report Illinois State Board of Health—5 copies.
- Fifth Annual Report State Board of Health, L. and C., Massachusetts; Supplementary Papers on Public Health. By the Board.
- Five Circulars of Information—Education.
- Floating Matter of the Air in Relation to Putrefaction and Infection. By John Tyndall, F. R. S.
- Foods. By Edward Smith, M. D., S. S. B., F. R. S.
- Forty-second Registration Reports Massachusetts, 1883. By the Board.
- Fourth Annual Report State Board of Health, New York, 1884. By the Board.
- Fourth and Sixth Annual Reports Board of Health of the Health Department, 1874-5. Donor, Health Department City of New York.
- Habitual Drunkenness and Insane Drunkards. By John Charles Bucknell, M. D.
- Health. By Edward Smith, M. D., F. R. S.
- Health Laws, Augusta, Ga., 1883. By the Board.
- Health Laws of Illinois and Sanitary Memorial.
- Health Laws and Sanitary Condition at Ionia, Mich.
- HEALTH PRIMERS:
- No. 1.—Exercise and Training.
 - No. 2.—Alcohol; Its Uses and Abuses.
 - No. 3.—The House and its Surroundings.
 - No. 4.—Premature Death: Its Promotion or Prevention.
 - No. 5.—Personal Appearance in Health and Disease.
 - No. 6.—Baths and Bathing.
 - No. 7.—The Skin and its Troubles.
 - No. 8.—The Heart and its Function.

- History of Asiatic Cholera. By C. MacNamara, F. C. M.
 History of the Water Supply of the World. By Thomas J. Bell.
 Horseback Riding from a Medical Point of View. By Gheslam
 Durant, M. D.
 Hydrophobia. By Horatio R. Biglow, M. D.
 Hygiea, a City of Health. By B. W. Richardson, M. D., F. R. S.
 Hygiene of the Voice. By Gheslam Durant, M. D., Ph. D.
 Infants' Feeding. By C. H. F. Routh, M. D., M. R. C. P. S.
 Insanity and Its Prevention. By Daniel Hack Tuke.
 Is Consumption Contagious, and Can It be Transmitted by Means
 of Food? By H. C. Clapp, A. M., M. D.
 Kentucky State Sanitary Council, Bardstown.
 Laws of Michigan—Public Health. By the Board.
 Lectures on State Medicine. By D. E. Chaumont.
 Louisiana State Board of Health. Address by the President.
 Medical Examinations (N. C. State Board of Health.) By the Board.
 Mental Hygiene. By D. A. Gorton, M. D.
 Microscopical Examinations of Drinking Water. By J. D. McDon-
 ald, M. D., R. N., F. R. S.
 Minnesota, Its Character and Climate. By Iedgard Bill.
 Minnesota as a Home for Invalids. By Brewer Mattocks.
 Morbid Anatomy and Post-mortem Examinations. By Francis
 Delafield.
 Mouth Breathing. By Clinton Wagner, M. D.
 Nervous Exhaustion. By George M. Beard, M. D.
 Official Register of Physicians State Board of Health, Illinois,
 1877, 1884. Donor J. H. Rauch.
 On Life and Vital Action in Health and Disease. By L. S. Beale,
 M. D.
 Parasites. By T. Spencer Cobbold, M. D., F. R. S., F. S. S.
 Petition in behalf of State Medicine to the General Assembly of
 the State of Louisiana. By the Louisiana State Medical So-
 ciety.
 Physical Education, or The Health Laws of Nature. By Felix S.
 Oswald, M. D.
 Physical Life of Woman. By George H. Napheys, A. M., M. D.
 Physical Perfection. By D. H. Jacques.
 Physiological Effects of Severe and Protracted Muscular Exercise.
 By Austin Flint, Jr., M. D.
 Preliminary Report on Yellow Fever in Texas in 1882.
 Prevention of Asiatic Cholera, 150 copies. By the Board.

Proceedings of the Jackson, Miss., Meeting of the Sanitary Council of the Mississippi Valley.

"Quarantine and Commerce." Address by Dr. Joseph Holt.

Quarantine on the Southern and Gulf Coasts. By Harvey and Brown.

Quarantine and Sanitary Operation of the Board of Health, State of Louisiana, 1880-1-2-3. Presented by Gov. Bate.

Quarterly Report of the Illinois State Board of Health.

Regulations for Registration of Births and Deaths of the Registrar General of England.

Relief and Reform. By W. P. Letchworth. Donor, the author.

Report of the Connecticut State Board of Health, 1883.

Report of the National Board of Health, 1883. By the Board.

Report of Secretary and Rules of Madison County (Ind.) Board.

Report of the U. S. Commission of Education, 1882-'83. The Bureau.

Rules of Indiana State Board of Health.

Sanitary Committee of Ionia, Michigan, 1883. By the Board.

Sanitary Council, Anderson, Ind.

Sanitary Engineering. By Latham.

Sanitary Needs of the Poor, by C. W. Chancellor, M. D. Donor, the author.

School Books on Physiology and Hygiene. By Stanford E. Challee, M. D.

Schools and Industrial Hygiene. By D. F. Lincoln, M. D.

Second Annual Report Board of Health of Ontario, 1883, two copies. By the Board.

Second Annual Report Metropolitan Board of Health, 1867. Donor, Health Department City of New York.

Second Annual Report Board of Health of the Health Department, 1871. Donor, Health Department City of New York.

Sewerage System, Providence, R. I. S. M. Gray, City Engineer.

Sewerage of Kansas City. By Robert Moore.

Sixth Annual Report Rhode Island State Board of Health.

Sixth Annual Report Board of Health, Augusta, Ga., 1883. By the Board.

Statistics of the University of Zurich. Commiss'r of Education.

Studies on Fermentation. By L. Pasteur.

Syphilis and Marriage. By Alfred Fourmia.

Tennessee School Report, 1884.

The Dwelling and Surroundings, by F. W. Hatch, M. D. Donor, the author.

- The Maintenance of Health. By J. Melven Fothergill, M. D., M. R. C. P.
- The Municipal and Sanitary Engineers' Hand-Book. By H. Percy Boulnois, M. Inst. C. E.
- The Use and Abuse of Tobacco. By John Lozoos.
- The Guide-board on the Road to Happy Old Age. By W. W. Hall, M. D.
- The Mineral Springs of the United States and Canada. By George E. Walton, M. D.
- The Sanitary Code, and Treatment of Children; five essays, 1 vol.
- The Physiology and Pathology of the Blood. By Richard Norris, M. D., F. R. S. E.
- The Cell Doctrine; its History and Present State. By James Tyson, M. D.
- The Formation of Vegetable Mould. By Charles Darwin, S. S. D., F. R. S.
- The Germ Theory applied to the Explanation of the Phenomena (The Specific Fevers) By T. MacLagan, M. D.
- The Influence of Tropical Climates on European Constitutions. By James Johnson, M. D., and James R. Martin, Esq.
- The Analysis of Foods. By Alexander W. Blyth, M. R. C. S., F. C. S.
- The Sanitary Draining of Houses and Towns. By George E. Waring, Jr.
- The Fifth Annual Report of the Connecticut State Board of Health.
- The Tenth Annual Report of the Secretary of the Michigan State Board of Health
- The Ninth Annual Report of the New Haven City Board of Health.
- The Seventh Registration Report of Michigan.
- The Ninth Report of the Knoxville City Board of Health.
- "The Sewerage of Kansas City"
- The Mississippi Valley Medical Monthly, Memphis.
- The Nashville Journal of Medicine and Surgery.
- The Southern Practitioner, Nashville.
- Third Annual Report Metropolitan Board of Health, 1868. Donor, Health Department City of New York.
- Third Annual Report Board of Health of the Health Department 1872. Donor, Health Department City of New York.
- Third Annual Report State Board of Health of New Hampshire, 1884. By the Board.
- Transactions N. Y. Academy of Medicine, Vol. III. Second Series.
- Transactions of the Medical Society of the State of Tennessee for 1883.

Transactions of the American Public Health Association, Vol. VII.
Transactions of the American Public Health Association, Vol.
VIII. The two latter by purchase.

Transactions of the Tennessee State Medical Society, 1884.

Transactions New Hampshire Medical Society, 1884. Donor Dr.
G. P. Conn.

Two pamphlets on Quarantine. Donor Dr. J. Holt.

Use and Abuse of Alcoholic Liquors. By William B. Carpenter,
M. D.

Vaccination. By Joseph E. Edwards.

Vital Statistics, Health Department 1876-7. Donor, Health De-
partment City of New York.

Vital Statistics Health Department, 1878-9. Donor, Health De-
partment City of New York.

Warming and Ventilating Houses. By Hood.

Webster's Unabridged Dictionary.

Yellow Fever, its Ship Origin and Prevention. By Robt. S. Har-
gis, M. D.

And the usual circulars and exchanges from other Boards.

NOTE—Reports and pamphlets as a rule were presented by Boards
and authors, while other books were purchased.

REPORT OF THE FINANCE COMMITTEE.

BY E. W. COLE, CHAIRMAN.

RECEIPTS.

| | |
|--|--------------------|
| To amount on hand April 1, 1881 | \$ 174 02 |
| To amount of appropriation from State, \$3,000 per year, for
four years, ending April 1, 1885 | 12,000 00 |
| | <u>\$12,174 02</u> |

EXPENDITURES.

| | | |
|----------|--|----------------------|
| 1881-82. | By postage account | \$ 124 00 |
| | By Secretary's salary | 900 00 |
| | By members' per diem and expenses | 464 85 |
| | By printing | 100 85 |
| | By printing First Report | 1,074 70 |
| | By Secretary's traveling expenses | 144 48 |
| | By office expenses | 49 45 |
| 1882-83. | By postage account | 119 25 |
| | By Secretary's salary | 900 00 |
| | By members' per diem and expenses | 715 50 |
| | By printing | 196 88 |
| | By Secretary's traveling expenses | 92 50 |
| | By office expenses | 260 34 |
| | By Library fund | 200 00 |
| | By J. B. Lindsley, for past services | 200 00 |
| 1883-84. | By postage account | 65 00 |
| | By Secretary's salary | 1,000 00 |
| | By members' per diem and expenses | 429 90 |
| | By printing | 115 88 |
| | By members' traveling expenses | 135 90 |
| | By office expenses | 148 45 |
| 1884-85. | By postage account | 150 84 |
| | By Secretary's salary | 1,000 00 |
| | By members' per diem and expenses | 459 95 |
| | By members' traveling expenses | 321 45 |
| | By President's traveling expenses | 90 00 |
| | By printing | 422 30 |
| | By clerical help | 195 00 |
| | By ozone observations (Long) | 76 70 |
| | By office expenses | 44 70 |
| | By printing Second Report | 1,588 00 |
| | By balance remaining on hand April 1... | 387 15 — \$12,174 02 |



APPENDIX.

STATUTE CREATING COUNTY BOARDS OF HEALTH.

AN ACT to authorize the several counties in this State to adopt more efficient measures for promoting the Public Health.

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee,* That, hereafter, the County Judge or Chairman, County Court Clerk, and the County Health Officer, or Jail Physician, are hereby constituted a County Health Board, with the Jail Physician or County Health Officer as President, who shall have the management of the general health of the county, and shall institute such measures therefor as they may think best, and when cholera or yellow fever, or other contagious and epidemic diseases, are either threatened or exist in their county, it shall be the duty of the County Health Officer or Jail Physician to report to the State Board of Health at once, and as often thereafter as they may think proper, and the County Board shall adopt and carry into effect such rules and regulations as may be prescribed by said State Board of Health, having for their object the restriction and suppression of such diseases.

SEC. 2. *Be it further enacted,* That the necessary expenses incurred by said County Board of Health in preventing or restricting such epidemic diseases, as well as for the protection and promotion of the general health of the county, are hereby made a county charge, and the county court shall order the payment of the same out of the funds of the county.

SEC. 3. *Be it further enacted* That any person violating any rule or regulation of said Board of Health, having for their object the prevention, restriction or extinction of epidemic and contagious diseases in the county, or the promotion of the general good health of the same, and shall fail to comply with said rules and regulations, after a written notice pertaining thereto is served upon him or her, shall be guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than five nor more than twenty five dollars, or confined in the county jail, for each offense, at the discretion of the court.

SEC. 4. *Be it further enacted,* It shall be the duty of the county courts, where there are jails in their counties, at the first quarterly term after the passage of this Act, except in those counties

where such officers have already been elected, to elect or appoint a Jail Physician or Health Officer for their respective counties, whose duty it shall be to render medical and surgical attention to patients of the county confined therein awaiting trial, or who are under conviction by the courts of the county; and who shall hold office until the following January term of the court, when the successors to all County Health Officers throughout the State shall be elected by them for a period of four years, and so on quadrennially.

SEC. 5. *Be it further enacted*, That compensation to Jail Physicians, or County Health Officers, shall be such as the county court may fix.

SEC. 6. *Be it further enacted*, This act shall not be construed as conflicting with existing Municipal Boards of Health throughout the State.

SEC. 7. *Be it further enacted*, All laws or parts of laws in conflict with this Act are hereby repealed.

SEC. 8. *Be it further enacted*, That this Act take effect from and after its passage, the public welfare requiring it.

C. R. BERRY,

Speaker of the the Senate.

J. A. MANSON,

Speaker of the House of Representatives.

Approved April 4, 1885.

WM. B. BATE, *Governor.*

INTRAMURAL INTERMENT.

AN ACT to protect the health of the people and to prevent the spread of disease.

SECTION 1. *Be it enacted by the General Assembly of the State of Tennessee*, That every municipal corporation or taxing district of the State, containing a population of thirty-six thousand, according to the census of 1880, or that shall hereafter contain a population of thirty-six thousand, shall not hereafter be permitted to bury the dead within the corporate limits.

SEC. 2. *Be it further enacted*, That any person violating section 1 of this Act shall be guilty of a misdemeanor, and upon conviction thereof shall be fined a sum not less than one hundred dollars, nor more than two hundred dollars.

SEC. 3. *Be it further enacted*, That all laws or parts of laws in conflict with the provisions of this Act, be and the same are hereby repealed.

SEC. 4. *Be it further enacted*, That this Act take effect from and after its passage, the public welfare requiring it.

Passed April 4, 1885.

J. A. MANSON,
Speaker of the House of Representatives.
C. R. BERRY,
Speaker of the Senate.

Approved April 6, 1885.

WM. B. BATE, *Governor.*

ACTION OF THE TENNESSEE STATE BOARD OF HEALTH, APRIL 14, 1885.

SECOND DAY'S MEETING.

The Board met pursuant to adjournment at 9 A. M.

Present—Dr. J. D. Plunket, President; Dr. James M. Safford, Vice-President; Dr. G. B. Thornton, Dr. P. D. Sims, Dr. Daniel F. Wright.

The Committee on Rules for County and Local Boards made the following report:

The Committee to formulate rules and regulations in accordance with the recent law passed by the General Assembly entitled an Act to authorize the several counties in this State to adopt more efficient measures for promoting the public health, beg leave to report that after careful review they find the sanitary propositions heretofore promulgated by this Board, with slight modifications, ample for present purposes. These propositions will be found on pages 9-14 inclusive, in the second report of this Board. Upon the development of any contagious or infectious disease in any given county, special instructions will be issued as circumstances may require.

Dr. P. D. Sims offered the following resolutions, which were adopted by the Board:

In order to secure more authentic and reliable mortuary statistics from the various public institutions of the State,

Resolved, That the warden of every State prison in the State, and the Superintendent of every asylum in the State, of whatever character, be requested to send to this Board, at the end of each and every month, a tabulated report of the daily average and whole number of inmates; age, sex and color; number of sick for the month, and their diseases; number of deaths, and their causes, and the general sanitary condition of the institution; and that every County Board of Health be required by the State Board, under authority of the said law, to make to this Board a similar report; and in order that these reports may be in proper and uniform form.

Resolved, That the Secretary of this Board be and he is hereby instructed to furnish, for the present at the expense of this Board, to all the aforesaid institutions, the necessary printed blanks, as models, according to form given.

Resolved, That this Board take as a basis of calculating-rate of mortality for all prisons and other public institutions, the daily average population of said institutions for the year, this being the only correct standard, as compared with the average or fixed census of outside communities, which is always their basis of mortality-rate

The following additional rules, for the guidance of County Boards of Health, proposed by Dr. P. D. Sims, were adopted :

1 It shall be the duty of the Board to keep in a book prepared for the purpose, a daily record of inmates in every jail, workhouse, house of correction or other prison in the county over which the county has control. This record shall show the age, sex and color of inmates

2 It shall be the duty of the Board to keep a permanent record of every patient treated in the various county prisons, the disease for which treated, and the result.

3 It shall be the duty of the Board, through its Secretary, to report, at the end of each week during an epidemic, and the end of each month when there is no epidemic, to the Secretary of the State Board of Health, the total number of inmates in prison for the month, age, sex and color, the daily average for the month, the number of sick for the month and their diseases, the number of deaths and the causes thereof, and the general sanitary condition of the prison and prison population.

DAVIDSON COUNTY BOARD OF HEALTH.

The prompt action of Davidson county shows what great benefit the people of Tennessee will derive from the enactment creating County Boards of Health. More especially will this be the case when its provisions are carried out by well informed and active Health officials. As the readiest and most satisfactory way of answering communications now frequently received, I here give in full the recent action of the Davidson County Board of Health:

J. B. L.

OFFICE OF DAVIDSON COUNTY BOARD OF HEALTH,
NASHVILLE, TENN., April 21, 1885.

In pursuance of the foregoing Act of the General Assembly of the State of Tennessee, Hon. John C. Ferris, Judge of the County Court, Hon. Charles H. Eastman, Clerk of the County Court, and Dr. W. C. Cook, Jail Physician and Health Officer of Davidson County, met for the purpose of organizing as a County Board of Health for said county.

Dr. W. C. Cook, (under said Act) the President of the Board, called the members to order and moved that the County Court Clerk, Charles H. Eastman, be appointed Secretary, which was carried.

Health Officer Cook then read the following address to the Board:

Gentlemen of the Davidson County Board of Health:—The recent Legislature, as you are aware, passed a law constituting in each county of this State, a County Board of Health, composed of the County Judge, Clerk of the County Court and Jail Physician or Health Officer as President of the same, to whom all public health matters are entrusted, and who furthermore are alone made responsible for the proper management. To at once complete the organization and put into effect all measures we may deem necessary to protect the public health and to discharge our duty as a Board, I have called you together.

There is, circumjacent to this city, six civil districts, containing a dense suburban population of perhaps 20,000 or 25,000. They have no corporate organization and no sanitary system, other than such as the county at times has given them. This large population has no sewers, no water-closets, nothing but surface drainage. The privy accommodations are mostly upon the surface also, or in open vaults, which are objectionable in the extreme, when from any

cause they are neglected. Our observation heretofore teaches that, while many people attend to removal of such and cleaning up premises, many more do not. They await for some one in authority to direct them. The Health Inspectors of last season did much valuable sanitary work at comparatively little cost to the county, by their daily and house to house visits of inspection. Where nuisances existed occupants or owners of the property were notified to abate same under penalty. The present law as to penalties is much stronger. When notified by the officer, citizens in every instance, except two, readily complied with the law at their own expense. As long as inspectors are employed this will be the result. In view of the unsanitary condition of these localities and a possibility of an invasion of epidemic disease, I suggest that we at once employ a sufficient number of inspectors to visit, immediately, every house in the district suburbs and direct that all nuisances be abated, premises thoroughly cleaned and limed at expense of owners or occupants under penalty of the law.

Dr. Cook presented and moved the following resolution, which was carried unanimously, viz.:

Resolved, That the County Health Officer is directed hereby to have printed such circulars, legal blanks and forms, as may be necessary to properly carry out the law and work of his office, and to employ two men as Sanitary Inspectors (with experience if possible), whose compensation shall not exceed \$2 00 per day, of ten hours each, and to be continued as long as he may deem necessary for the good of public health. And furthermore, he is directed to prepare a Code of Rules for the government of the County Board of Health, as well as an "order of business" for the same and report to the present or next meeting of this Board.

Whereupon, Dr. Cook offered the following By-laws and Order of Business, which were adopted:

BY-LAWS OF THE DAVIDSON COUNTY BOARD OF HEALTH.

SECTION 1. The Health Board shall hold its meetings on the first and third Tuesdays in each month, at 3 o'clock, or upon call of the President, when the business of the Board shall be discharged in a formal and orderly manner.

SEC. 2. No bills or any contract of the Board shall be made by any member till ordered by the Board. Said bills must be presented to, and approved by the Board, and signed by the President.

SEC. 3. The Health Officer shall be the Executive Officer of the Board, whose duty shall be to take general and constant supervis-

ion over the public health of the county ; hear complaints from citizens as to nuisances and order their abatement ; direct the Sanitary Inspectors in their work, and have legal notices served when necessary ; to make a written report to the Board at each meeting of the progress of sanitary labor, the condition of the public health : and to offer such suggestions as he may think proper for the benefit of the Board.

SEC. 4. The duty of the Secretary shall be to call the roll and keep full and faithful minutes of each meeting.

SEC. 5. All resolutions must be submitted in writing to the Board by motion and second, and decided by vote of the same, the President voting also.

SEC. 6. These By-laws may be altered or amended at any regular meeting, provided notice has been given at the preceding meeting.

ORDER OF BUSINESS.

1. Roll call.
2. Reading and adopting minutes.
3. Report of Health Officer.
4. Report of Special Committees.
5. Unfinished business.
6. New business.
7. Resolutions.
8. Adjournment.

It was ordered that the Health Officer employ one extra Sanitary Inspector for the present, and the Secretary purchase such books, etc., as he may find necessary to record the minutes and keep the accounts, etc., of the Board.

The Board then adjourned to meet again April 21, 1885, which they did ; whereupon, after reading the minutes of the preceding meeting by Mr. Eastman, the Health Officer submitted his report, which was received, extracts from which are as follows :

Gentlemen of the Board :

As ordered by your Board, I selected three men as Sanitary Inspectors, at two (2) dollars per day. Their names are John Leonard, R. H. Neal and Nat. M. Smith ; also have had printed 8,000 public health circulars, and 4,000 public health rules containing extracts of the law as to sanitation ; the penalties for violating any rule or regulation of the Board of Health ; giving instructions by said rules and circulars to the people as to methods of cleaning up their premises and abating nuisances.

The following resolution was adopted by the Board:

Resolved, That the County Health Officer is hereby instructed to furnish to magistrates, physicians and others, such papers, reports, circulars, rules, regulations, etc., from time to time as he may deem necessary to keep them informed as to the work of the health department of the county, and that he, furthermore, is hereby directed to buy necessary postage therefor.

After which the Board adjourned to May 5, when the Health Officer submitted the following report, which shows the workings of the new health system and the favor which it meets at the hands of the people.

To the Davidson County Board of Health:

As directed by you, I had printed 8,000 circulars on public health, and 4,000 public health rules, containing extracts of the law, showing the penalties to be visited upon all persons who violate said laws, rules and regulations of the County Board of Health, and had the same distributed from house to house by the inspectors, hung up in street cars in bunches; placed in shops and factories, stores and public places throughout the district; also, printed in the city daily papers, and in this way have successfully disseminated a knowledge of what the laws of the State demand of all citizens in regard to public health. The people, seeing the great importance of complying, readily consent, with few exceptions, to cleanse their premises and abate nuisances at their own expense, when they are responsible for them. Divers kinds, that have existed for years, since April 18, when our inspectors began work, have been abated by the people. I have also forwarded to each magistrate copies of these publications, feeling that they would be willing and intelligent co-operators in the work of public sanitation. Furthermore, knowing the great value to the County Board of Health of having the wise counsel of physicians enlisted, not only in our own behalf, but especially for the people also, I have addressed a circular letter to each doctor in the county, urging them to give us their hearty support in the work of public health.

The following is a statement of the sanitary work done by the County Sanitary Inspectors since date of their appointment, April 18 to 20, inclusive:

| DISTRICT. | No. Inspect'n
Visits. | No nuisances
abated.
(Privies.) | Hog Pens
abated. | Carcasses
buried. | Stable nui-
sances abated. | No. written
notices served. | SANITARY INSPECTOR. |
|-----------------|--------------------------|---------------------------------------|---------------------|----------------------|-------------------------------|--------------------------------|---------------------|
| 18..... | 1,142 | 320 | 10 | ..... | 7 | 11 | John Leonard. |
| 9, 10, 15..... | 1,302 | 93 | 21 | 14 | 40 | 17 | R. H. Neal. |
| 17, 18, 20..... | 560 | 4 | 59 | 14 | ..... | ..... | N. M. Smith. |
| Totals..... | 3,004 | 417 | 92 | 28 | 53 | 28 | |

Complaints reached me from Goodlettsville that that village was needing inspection, and I forthwith sent an inspector, who caused many nuisances to be abated, to the joy of the people.

At an early date I will have all the villages of the county inspected, especially those on the railroads.

In conclusion, it is gratifying to see that the people are heartily co-operating with this Board in its work. Never before has sanitary effort met with such great encouragement in this county as now, under the new law authorizing the organization of County Boards of Health.

The following blank will henceforth be used by inspectors for classifying and keeping a record of nuisances:

DAVIDSON COUNTY BOARD OF HEALTH.

Report of Nuisances from—188—, to—188—, In—

| Nature of Nuisances. | Total. | Abated. | Un'bat'd |
|------------------------------------|--------|---------|----------|
| Alleys, filthy | | | |
| Alleys, garbage in | | | |
| Alleys, need repair | | | |
| Areas | | | |
| Ashes | | | |
| Branches | | | |
| Cellars | | | |
| Carcasses | | | |
| Draining, surface | | | |
| Garbage | | | |
| Guttering | | | |
| Hog Pens | | | |
| Houses, filthy | | | |
| Houses, unfit for habitation | | | |
| Houses, slaughter | | | |
| Houses, no privy | | | |
| Hydrants | | | |
| Lots, filthy | | | |
| Lots, stagnant water | | | |
| Miscellaneous | | | |
| Notices served | | | |
| Pipes, water | | | |
| Ponds | | | |
| Privies, filthy | | | |
| Privies, dilapidated | | | |
| Privies, full | | | |
| Privies, leaky boxes | | | |
| Pumps | | | |
| Sewers | | | |
| Sinks | | | |
| Stables | | | |
| Stables, cow | | | |
| Streets, filthy | | | |
| Streets, need repair | | | |
| Springs | | | |
| Yards | | | |
| Yards, stock | | | |
| No. visits of inspection | | | |

REMARKS:

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SUGGESTIONS FOR THE RESTRICTION AND PREVENTION OF DISEASE.

One of the most eminent civil engineers of America remarked to me in an Eastern city a few weeks since, that State preventive medicine was one of the great movements of the age, and that it was destined to effect a revolution in the medical profession. He is undoubtedly correct. No feature in American legislation during the last ten years is more prominent than the rapid and continuous increase in attention to all that affects the public health. The establishment of State Boards of Health in almost every one of the sovereign States is, perhaps, what attracts most attention. Still there is a vast amount of legislation cognate which should not be overlooked; also, the fact that the few backward States are fast falling into line. Only the other day, the great State of Kansas established its Board, with funds and powers.

As a rule, all the State Health Boards are engaged in disseminating broadcast among the people the most recent information concerning the prevention of small-pox, diphtheria, typhoid fever, cholera, scarlet fever, etc. Such documents are circulated in editions of 25,000 and 30,000 at a time; also, even more liberally, circulars giving instructions in points belonging to every-day sanitation. As a specimen, I wish my readers to study the following, just sent out by the old State of New Hampshire, famous as the mountain health resort of America. The principles of sanitary science formulated practically in this and similar documents, are of universal application, and have been repeated many times in this volume. The special directions given in this one apply about as well to Tennessee as to New Hampshire. It has been carefully prepared by the able Secretary of that Board, Dr. Irving A. Watson: J. B. L.

CONCORD, N. H., April, 1885.

To Local Boards of Health, Health Officers, and the Public:

The attention of Boards of Health, Health Officers, and the public is called to the great importance of sanitary work, in order to place our cities and towns in the best possible condition to resist such preventable diseases as cholera, typhoid fever, diphtheria, cholera infantum, cholera morbus, dysentery, diarrhea, and many other ills which are either dependent upon or aggravated by the neglect of attention to proper cleanliness in and about the household premises and public streets. Experience has proven that these

diseases cannot thrive where the sanitary surroundings are perfect. Hundreds die annually in our State that might be saved by sanitary work. The reports of the physicians of the State, published in the annual reports of this Board, demonstrate this beyond controversy. To commence, then, immediately, the work of cleaning up—of putting every street, alley, public building, dwelling and out house in the best possible state of cleanliness—is a work which we strenuously and authoritatively urge upon all.

LOCAL BOARDS OF HEALTH

should begin at once a thorough system of inspection within their respective localities. To wait for complaints to be made is to excuse themselves from an imperative duty which by oath of office they have sworn to perform.

An examination of the public streets and all adjacent buildings should be carefully made. Alleys, yards, cesspools, privies, drains, etc., not in good condition, should be promptly attended to by order of such Board. A Board of Health should also be prepared to give sanitary advice, and to educate, so far as may be, the people in matters pertaining to sanitation.

The individual responsibility of the owners of dwellings, as well as of parents and guardians, renders it incumbent upon themselves to place

THE DWELLING AND ITS SURROUNDINGS

in an order of perfect cleanliness. The germs of disease may develop or grow in a dirty and mouldy cellar, a neglected vault, a foul sink-drain, refuse heaps, in fact, whatever the sunlight or air does not purify, unless some special work of purification is done. To neglect this work is a sin of omission, for which all must ultimately answer.

CELLARS

should be renovated by removing all vegetables, rotten wood, wet boards, empty boxes, barrels, etc. The cellar windows should be opened or removed and gratings put on, so as to give a free circulation of air through the cellar—for fresh air is the greatest of purifiers and disinfectants. The walls should be swept, and together with the floor, if cement, should be washed with a solution of carbolic acid, of the strength of an ounce of the pure acid to a gallon of water, before being whitewashed. If the floor is of earth it should be scraped over, all the loose portion carried away, and fresh sand or coarse gravel spread over the surface.

PRIVIES

are attended with much danger to the health of the family unless properly constructed and well cared for, especially if within a short

distance of the family water supply. Every privy should have a water-tight vault, or, better still, a water-tight portable box, in which has been placed a suitable amount of dry earth. Every privy should be supplied with a quantity of dry earth, and a little of the same should be sifted into the box or vault every day. Coal ashes or slacked lime will answer the same purpose. This little daily attention will keep the box or vault in an almost or quite odorless condition. It should be emptied as often as necessary, even if it be once a week. There is no better disinfectant than dry earth if used as above directed, and a dozen bushels will suffice for a small family for a year. In addition to this, or in lieu of it, disinfectants should be freely used, if found necessary.

SINK-DRAINS

are often found more dangerous and greater nuisances than privies. Underground cesspools, made by sinking a barrel or box in the ground and covering up, are exceedingly dangerous, and should never be constructed. The gases arising from such cesspools follow the pipe or drain back into the house, and the contents of the cesspool leaching into the soil endanger the family well, even if located many feet from it. If no sewer can be reached, it is better to allow sink waste to discharge upon the ground in the open air and sunlight; but this should be as far from the house as possible, and not in line with the prevailing winds. A trap which prevents the return of gas should be put under every sink. At the discharge end of the drain no pit or pool should be allowed to form, as the more the waste is spread out to the air the quicker are its poisons destroyed. This can be treated with dry earth or dry muck, and thus be kept in a good condition, and the product utilized for a fertilizer. Disinfectant fluids should be frequently poured into the sink in order to disinfect the drain-pipe or box, especially in warm weather. In kitchen sinks made of wood, it is better to apply these disinfecting solutions very hot, and they should be used over the whole wood-work of the sink.

WATER-CLOSETS

and set wash-bowls are not automatic in action, and should receive daily attention in order to keep them in good condition. Very much depends upon the plumbing; no fixtures of this kind can be considered perfect or safe unless well trapped and ventilated. The soil-pipe should always terminate above the roof of the building. Pressure of gas upon the traps is thus prevented, and ventilation secured. In unoccupied rooms containing set wash-bowls, the water should be allowed to run slowly, or else a little turned on

every day or two to prevent evaporation and unsealing of the trap. If the house is to be closed for a few weeks, the traps may be filled with kerosene or glycerine to secure them against unsealing by evaporation. The flushing of the closets should be abundant, from two to six gallons at a time. If properly constructed and cared for, no sewer gas can enter; otherwise they may become a serious element of danger to the household. Direct pressure is not to be depended upon, and supply tanks, for flushing water-closets and supplying water-backs to kitchen stoves, should always be used.

THE WATER SUPPLY.

The water supply of our cities and several of the large towns is generally from sources of undoubted purity, but to the many residing in the smaller villages and on farms there is an ever-present source of danger in wells upon which they are forced to rely for water for domestic uses. Polluted well water is often delicious to the taste, and looks pure and sparkling, and its pollution is not recognized except by tests or by an analysis, hence the dangerous poisons, like the nitrates, albuminoid ammonia, etc., may be drank without suspicion. Farm houses, where the danger of such pollution is greatest, as well as villages, should be supplied, if possible, with water from a good spring, stream, pond or lake. Such water is the purest that can be obtained, and, with a moderate use of ice during the summer months, is delicious the whole year. The practice of using such water during the cooler months, and drinking the water of a "cool well" in the summer, is attended with great danger. The examination of the water from hundreds of wells in this State, by this Board, has demonstrated that a large majority are polluted, and dangerous to health. The only way to protect a well that has not already become contaminated, is by the most scrupulous attention to the entire surroundings. So long as the old privy system is in use, and the sink discharges upon the ground, and stables and hog-pens and refuse heaps are in existence, so long will wells become dangerously contaminated, unless situated a great distance from any of the objects named. Twenty-five, fifty, or even a hundred feet of intervening soil is no guaranty of safety to the well, as the percolating fluids will often go to a much greater distance through certain kinds of earth.

ALLEYS AND YARDS

should be kept in a cleanly condition. Rotten vegetables and other household waste should not be thrown about, as is often done, but put into the kitchen range or stove, or carted away before further decomposition takes place. A clean soil is one of the essentials of good health.

AMPLE VENTILATION

should be secured for every room in which people work, live and sleep. Pure air is indispensable. Sleeping in an ordinary bedroom with windows closed tightly should never be practiced. The atmosphere of such a room soon becomes loaded with the poisonous exhalations of the lungs and skin eliminations, and is rendered unfit for further use. See that every room is thoroughly ventilated. Pure, air, pure water, and a soil that is uncontaminated, are primary principles of good health. New Hampshire is abundantly supplied, and with care, these

ESSENTIALS OF HEALTH,

coupled with a plain and substantial diet, temperate habits, and regular hours of sleep, will place any household in the best possible condition to resist sickness, and will prevent hundreds of unnecessary deaths.

We earnestly urge the practice of these health precepts upon every family in our Commonwealth.

DISINFECTION AND DISINFECTANTS.

At the meeting of the Sanitary Council of the Mississippi Valley, held at New Orleans March 10-11, 1885, on motion of Dr. Chaille, (La.) the following resolution was adopted

Resolved. That the Secretary request from the Chairman of the American Public Health Association, a plain, practical paper on disinfection and disinfectants, for popular use and distribution, to be furnished to the Chairman of the Special Committee on General Sanitation

In accordance with the above resolution, Dr John H Rauch, Secretary, addressed a letter, March 14th, to Surgeon George M. Sternberg, U S A, Chairman of the Committee on Disinfectants, requesting such a paper as called for by said resolution Surgeon Sternberg, under date of April 14, in a reply accompanying the copy, writes: "At a special meeting of the Committee on Disinfectants, called for the purpose, the paper submitted was carefully considered and adopted unanimously, as expressing the views of this Committee with reference to the best methods of disinfection known to us."

This paper was widely printed in medical journals, and was also distributed by the Committee of the American Public Health Association.

On May 15, the Executive Committee of this Board requested Prof J M. Safford to condense and arrange it for practical use in Tennessee By Prof. Safford's suggestion, it is given below in full as it appears in Proceedings of the Quarterly Meeting of the Illinois State Board of Health, Chicago, April 16-17, 1885 Prof Safford considers it the latest and most authoritative statement on a subject intrinsically of great interest, and about which the public is naturally very inquisitive Should occasion demand, he will prepare a condensed circular with special reference to local wants, which will be very widely distributed.

J. B. L.

PRELIMINARY REPORT ON DISINFECTION AND DISINFECTANTS,
Made by the Committee on Disinfectants of the American Public Health Association.

The object of *disinfection* is to prevent the extension of infectious diseases by destroying the specific infectious material which gives rise to them This is accomplished by the use of *disinfectants*

There can be no partial disinfection of such material, either its infecting power is destroyed or it is not. In the latter case there is

a failure to disinfect. Nor can there be any disinfection in the absence of infectious material.

It has been proved for several kinds of infectious material that its specific infecting power is due to the presence of living micro-organisms, known in a general way as "disease germs;" and practical sanitation is now based upon the belief that the infecting agents in all kinds of infectious material are of this nature. Disinfection, therefore, consists essentially in the destruction of disease germs.

Popularly, the term disinfection is used in a much broader sense. Any chemical agent which destroys or masks bad odors, or which arrests putrefactive decomposition is spoken of as a disinfectant. And in the absence of any infectious disease it is common to speak of disinfecting a foul cess-pool, or bad-smelling stable, or privy vaults.

This popular use of the term has led to much misapprehension, and the agents which have been found to destroy bad odors—*deodorizers*—or to arrest putrefactive decomposition—*antiseptics*—have been confidently recommended and extensively used for the destruction of disease germs in the excreta of patients with cholera, typhoid fever, etc.

The injurious consequences which are likely to result from such misapprehension and misuse of the word disinfectant will be appreciated when it is known that:

Recent researches have demonstrated that many of the agents which have been found useful as deodorizers, or as antiseptics, are entirely without value for the destruction of disease germs.

This is true, for example, as regards the sulphate of iron or cop-peras, a salt which has been extensively used with the idea that it is a valuable disinfectant. As a matter of fact, sulphate of iron in saturated solution does not destroy the vitality of disease germs or the infecting power of material containing them. This salt is, nevertheless, a very valuable antiseptic, and its low price makes it one of the most available agents for the arrest of putrefactive decomposition in privy vaults, etc.

Antiseptic agents also exercise a restraining influence upon the development of disease germs, and their use during epidemics is to be recommended, when masses of organic material in the vicinity of human habitations cannot be completely destroyed, or removed, or disinfected.

While an antiseptic agent is not necessarily a disinfectant, all disinfectants are antiseptics; for putrefactive decomposition is due to the development of "germs" of the same class as that to which disease germs belong, and the agents which destroy the latter also

destroy the bacteria of putrefaction, when brought in contact with them in sufficient quantity, or restrain their development when present in smaller amounts.

A large number of the proprietary "disinfectants," so called, which are in the market, are simply deodorizers or antiseptics, of greater or less value, and are entirely untrustworthy for disinfecting purposes.

Antiseptics are to be used at all times when it is impracticable to remove filth from the vicinity of human habitations, but they are a poor substitute for cleanliness.

During the prevalence of epidemic diseases, such as yellow fever, typhoid fever and cholera, it is better to use, in privy vaults, cess pools, etc., those antiseptics which are also disinfectants—i. e., germicides, and when the contents of such receptacles are known to be infected, this becomes imperative.

Still more important is the destruction at our sea-port quarantine stations of infectious material which has its origin outside of the boundaries of the United States, and the destruction, within our boundaries, of infectious material given off from the persons of those attacked with any infectious disease, whether imported or of indigenous origin.

In the sick-room we have disease germs at an advantage, for we know where to find them, as well as how to kill them.

Having this knowledge, not to apply it would be criminal negligence, for our efforts to restrict the extension of infectious diseases must depend largely upon the proper use of disinfectants in the sick room.

GENERAL DIRECTIONS.

Disinfection of Excreta, etc.—The infectious character of the dejections of patients suffering from cholera and from typhoid fever is well established, and this is true of mild cases and of the earliest stages of these diseases as well as of severe and fatal cases. It is probable that epidemic dysentery, tuberculosis and perhaps diphtheria, yellow fever, scarlet fever and typhus fever may also be transmitted by means of the alvine discharges of the sick. It is therefore of the first importance that these should be disinfected. In cholera, diphtheria, yellow fever and scarlet fever, all vomited material should be looked upon as infectious. And in tuberculosis, diphtheria, scarlet fever and infectious pneumonia, the sputa of the sick should be disinfected or destroyed by fire. It seems advisable also to treat the urine of patients sick with an infectious disease with one of the disinfecting solutions below recommended.

Chloride of lime, or bleaching powder, is, perhaps, entitled to the first place for disinfecting excreta, on account of the rapidity of its action. The following standard solution is recommended:

STANDARD SOLUTION, NO. 1.

Dissolve Chloride of Lime of the best quality in soft water, in the proportion of four ounces to the gallon.*

Use one pint of this solution for the disinfection of each discharge in cholera, typhoid fever, etc. Mix well and leave in vessel for at least ten minutes before throwing into privy-vault or water-closet. The same directions apply for the disinfection of vomited matters. Infected sputum should be discharged directly into a cup half full of the solution.

STANDARD SOLUTION, NO. 2.

Dissolve Corrosive Sublimate and Permanganate of Potash in soft water, in the proportion of two drams of each salt to the gallon.

This is to be used for the same purposes and in the same way as *Standard Solution No. 1*. It is equally effective, but it is necessary to leave it for a longer time in contact with the material to be disinfected—at least an hour. The only advantage which this solution has over the chloride of lime solution consists in the fact that it is odorless; while the odor of chlorine in the sick room is considered by some objectionable. The cost is about the same.† It must be remembered that this solution is highly poisonous. It is proper, also, to call attention to the fact that *it will injure lead pipes if passed through them in considerable quantities.*

STANDARD SOLUTION NO. 3.

To one part of Labarraque's Solution, (liquor sodæ chlorinatæ), add five parts of soft water.

This solution is more expensive‡ than the solution of chloride of

*NOTE.—Good chloride of lime should contain at least 25 per cent. of available chlorine. (See preliminary report of committee on disinfectants; *The Medical News*, Philadelphia, February 7, 1885, page 147). It may be purchased by the quantity at 5 cents per pound. The cost of the standard solution recommended is therefore less than two cents a gallon. A clear solution may be obtained by filtration or by decantation, but the insoluble sediment does no harm, and this is an unnecessary refinement.

‡Corrosive sublimate costs about seventy cents a pound, and permanganate of potash sixty-five cents a pound, by the single pound. This makes the cost of *Standard Solution No. 2* a little more than two cents a gallon.

†We assume that the solution used will contain at least 3 per cent. of available chlorine, which would give us 0.5 per cent. in the diluted solution. The cost per gallon of the undiluted solution should not be more than fifty cents by the quantity. This would make our standard solution cost between eight and ten cents a gallon.

lime, and has no special advantages for the purposes mentioned. It may, however, be used in the same manner as recommended for *Standard Solution No. 1*.

The following powder is also recommended for the disinfection of excreta in the sick room and of privy vaults, etc.

DISINFECTING AND ANTISEPTIC POWDER

One pound of chloride of lime ; one ounce of corrosive sublimate ; nine pounds of plaster of paris. Pulverize the corrosive sublimate and mix thoroughly with the plaster of paris. Then add the chloride of lime and mix well. Pack in pasteboard boxes or in wooden casks. Keep dry.

As an antiseptic and deodorizer this powder is to be sprinkled upon the surface of excreta, etc.

To disinfect excreta in the sick room, cover the entire surface with a thin layer of the powder—one-fourth inch in thickness—and if the material is not liquid pour on sufficient water to cover it.

Disinfection of the Person—The surface of the body of a sick person, or of his attendants, when soiled with infectious discharges, should be at once cleansed with a suitable disinfecting agent. For this purpose *Standard Solution No. 3* may be used.

In diseases like small pox and scarlet fever, in which the infectious agent is given off from the entire surface of the body occasional ablutions with Labarraque's Solution, diluted with twenty parts of water, will be more suitable than the stronger solution above recommended.

In all infectious diseases the surface of the body of the dead should be thoroughly washed with one of the standard solutions above recommended, and then enveloped in a sheet saturated with the same.

Disinfection of Clothing.—Boiling for half an hour will destroy the vitality of all known disease germs, and there is no better way of disinfecting clothing or bedding which can be washed than to put it through the ordinary operations of the laundry. No delay should occur, however, between the time of removing soiled clothing from the person or bed of the sick and its immersion in boiling water, or in one of the following solutions, and no article should be permitted to leave the room until so treated.

STANDARD SOLUTION NO. 4

Dissolve corrosive sublimate in water in the proportion of four ounces to the gallon, and add one drachm of permanganate of potash to each gallon to give color to the solution.*

* Mercuric chloride (corrosive sublimate) is soluble in cold water in the proportion of one part in sixteen. Solution is greatly facilitated by heat.

One fluid ounce of this standard solution to the gallon of water will make a suitable solution for the disinfection of clothing. The articles to be disinfected must be thoroughly soaked with the disinfecting solution, and left in it for at least two hours, after which they may be wrung out and sent to the wash.

N. B. *Solutions of corrosive sublimate should not be placed in metal receptacles*, for the salt is decomposed and the mercury precipitated by contact with copper, lead or tin. A wooden tub or earthen crock is a suitable receptacle for such solutions.

Clothing may also be disinfected by immersion for two hours in a solution made by diluting *Standard Solution No. 1* with nine parts of water—one gallon in ten. This solution is preferable for general use, especially during the prevalence of epidemics, on account of the possibility of accidents from the poisonous nature of *Standard Solution No. 4*. When diluted as directed this solution may, however, be used without danger from poisoning through the medium of clothing immersed in it, or by absorption through the hands in washing. A poisonous dose could scarcely be swallowed by mistake, owing to the metallic taste of the solution, and the considerable quantity that would be required to produce a fatal effect—at least half a pint.

Clothing and bedding which cannot be washed may be disinfected by exposure to dry heat in a properly constructed disinfecting chamber for three or four hours. A temperature of 230° Fah. should be maintained during this time, and the clothing must be freely exposed—*i. e.*, not folded or arranged in piles or bundles, for the penetrating power of dry heat is very slight.

The limitations with reference to the use of dry heat as a disinfectant are stated in a "Preliminary Report of the Committee on Disinfectants," published in the *Medical News*, Philadelphia, March 14, 1885.

The temperature above mentioned will not destroy the *spores* of *bacilli*—*e. g.*, of the anthrax bacillus, but is effective for the destruction of all disease germs which do not form spores; and there is good reason to believe that this list includes small-pox, cholera, yellow fever, diphthera, crysipelas, puerperal fever, and scarlet fever (?). Moist heat is far more effective, and it is demonstrated that ten minutes exposure to steam, at a temperature of 230° Fah., will destroy all known disease germs, including the most refractory spores.

In the absence of a suitable disinfecting chamber, it will be necessary to burn infected clothing and bedding, which cannot be disinfected by immersion in boiling water, or in one of the disinfecting solutions recommended.

Disinfection of the Sick-room.—In the sick-room no disinfectant can take the place of free ventilation and cleanliness. It is an axiom in sanitary science that it is impracticable to disinfect an occupied apartment; for the reason that disease germs are not destroyed by the presence in the atmosphere of any known disinfectant in respirable quantity. Bad odors may be neutralized, but this does not constitute disinfection in the sense in which the term is here used. These bad odors are, for the most part, an indication of want of cleanliness, or of proper ventilation: and it is better to turn contaminated air out of the window, or up the chimney, than to attempt to purify it by the use of volatile chemical agents, such as carbolic acid, chlorine, etc., which are all more or less offensive to the sick, and are useless so far as disinfection—properly so-called—is concerned.

When an apartment which has been occupied by a person sick with an infectious disease is vacated, it should be disinfected. But it is hardly worth while to attempt to disinfect the atmosphere of such an apartment, for this will escape through an open window and be replaced by fresh air from without, while preparations are being made to disinfect it. Moreover, experience shows that the infecting power of such an atmosphere is quickly lost by dilution, or by the destruction of floating disease germs through contact with oxygen, and that even small pox and scarlet fever are not transmitted to any great distance through the atmosphere; while cholera, typhoid fever, and yellow fever, are rarely, if ever, contracted by contact with the sick, or by respiring the atmosphere of the apartments occupied by them.

The object of disinfection in the sick room is, mainly, the destruction of infectious material attached to surfaces, or deposited as dust upon window-ledges, in crevices, etc. If the room has been properly cleansed and ventilated while still occupied by the sick person, and especially if it was stripped of carpets and unnecessary furniture at the outset of his attack, the difficulties of disinfection will be greatly reduced.

All surfaces should be thoroughly washed with a solution of corrosive sublimate of the strength of one part in 1,000 parts of water, which may be conveniently made by adding four ounces of *Standard Solution No. 4* to the gallon, or one pint to four gallons of water. The walls and ceiling, if plastered, should be brushed over with this solution, after which they may be whitewashed with lime-wash. Especial care must be taken to wash away all dust from window ledges and other places where it may have settled, and to thoroughly cleanse crevices and out of the-way places. After this application of the disinfecting solution, and an interval of twenty

four hours or longer for free ventilation, the floors and wood-work should be well scrubbed with soap and hot water, and this should be followed by a second more prolonged exposure to fresh air, admitted through open doors and windows.

Many sanitary authorities consider it necessary to insist upon fumigation with sulphurous acid gas—produced by combustion of sulphur—for the disinfection of the sick-room. As an additional precaution this is to be recommended, especially for rooms which have been occupied by patients with small-pox, scarlet fever, diphtheria, typhus fever and yellow fever. It should precede the washing of surfaces and free ventilation above recommended. But fumigation with sulphurous acid gas alone, as commonly practiced, cannot be relied upon for the disinfection of the sick-room and its contents, including bedding, furniture, infected clothing, etc., as is popularly believed. And a misplaced confidence in this mode of disinfection is likely to lead to a neglect of the more important measures which have been recommended. In the absence of moisture the disinfecting power of sulphurous acid gas is very limited, and under no circumstances can it be relied upon for the destruction of spores.* But exposure to this agent in sufficient quantity, and for a considerable time, especially in the presence of moisture, is destructive of disease germs, in the absence of spores. It is essential, however, that the germs to be destroyed shall be very freely exposed to the disinfecting agent, which has but slight penetrating power.

To secure any results of value it will be necessary to close the apartment to be disinfected as completely as possible, by stopping all apertures through which the gas might escape, and to burn not less than three pounds of sulphur for each thousand cubic feet of air space in the room.† To secure complete combustion of the sulphur it should be placed, in powder or in small fragments, in a shallow iron pan, which should be set upon a couple of bricks in a tub partly filled with water, to guard against fire. The sulphur should be thoroughly moistened with alcohol before igniting it.

Disinfection of Privy-vaults, Cess-pools, etc.—When the excreta—not previously disinfected—of patients with cholera or typhoid fever, have been thrown into a privy-vault this is infected, and disinfection should be resorted to as soon as the fact is discovered, or whenever there is reasonable suspicion that such is the case. It

*See Preliminary Report of Committee on Disinfectants in *The Medical News*, March 28, 1885.

†One litre of sulphur dioxide weighs 2.9 grammes. To obtain ten litres of gas it is necessary to burn completely fifteen grammes of "flowers of sulphur" (Vallin).

will be advisable to take the same precautions with reference to privy-vaults into which the excreta of yellow-fever patients have been thrown, although we do not definitely know that this is infectious material. Disinfection may be accomplished either with corrosive sublimate or with chloride of lime. The amount used must be proportioned to the amount of material to be disinfected.

Use one pound of corrosive sublimate for every five hundred pounds—estimated—of fecal matter contained in the vault, or one pound of chloride of lime to every thirty pounds.

Standard Solution No. 4, diluted with three parts of water may be used. It should be applied—the diluted solution—in the proportion of one gallon to every four gallons—estimated—of the contents of the vault.

If chloride of lime is to be used, one gallon of *Standard Solution No. 1* will be required for every gallon—estimated—of the material to be disinfected.

All exposed portions of the vault, and the wood-work above it, should be thoroughly washed down with the disinfecting solution.

To keep a privy vault disinfected during the progress of an epidemic, sprinkle chloride of lime freely over the surface of its contents daily. Or, if the odor of chloride is objectionable, apply daily four or five gallons of *Standard Solution No. 2*, which should be made up by the barrel, and kept in a convenient location, for this purpose.

Disinfection of Ingesta.—It is well established that cholera and typhoid fever are very frequently, and perhaps usually, transmitted through the medium of infected water or articles of food, and especially milk. Fortunately we have a simple means at hand for disinfecting such infected fluids. This consists in the application of heat. *The boiling temperature maintained for half an hour kills all known disease germs.* So far as the germs of cholera, yellow fever and diphtheria are concerned, there is good reason to believe that a temperature considerably below the boiling point of water will destroy them. But in order to keep on the safe side, it is best not to trust anything short of the boiling point (212° F.) when the object in view is to disinfect food or drink which is open to the suspicion of containing the germs of any infectious disease.

During the presence of an epidemic of cholera, it is well to boil all water for drinking purposes. After boiling, the water may be filtered, if necessary, to remove the sediment, and then cooled with pure ice, if desired.

A sheet of filtering paper, such as druggists use, and a glass or tin funnel, furnishes the best means for filtering water on a small scale for drinking purposes. A fresh sheet of paper is to be used each day.

THE OUTLOOK—CHOLERA MAY OR MAY NOT COME.

CAN BE MANAGED IF IT DOES COME.

Will cholera visit Tennessee in 1885? is a question upon everybody's tongue. In 1833, in 1849, in 1854, in 1866, and in 1873 it prevailed as an epidemic in Western Europe. Each of these epidemics crossed the ocean, and were especially violent in our own land locked State.

In 1883 the Egyptian epidemic caused much alarm in Europe, and much uneasiness in the lake district of the United States, as shown by the action of various health boards. However, it did not spread, and the alarm ceased. Unfortunately, the Egyptian epidemic made a slight inroad upon the great French maritime city, Marseilles, the authorities of which concealed the fact, instead of making the truth known and taking the usual steps to stamp it out. It is now an established axiom in sanitary science to make widely known the occurrence of the first case of any infectious disease, so that it may be prevented from spreading in the locality where it first appears, and that the public everywhere may be put upon its guard. So far is this idea now carried as to require medical men to report even suspicious cases, which are to be treated as dangerous until otherwise determined. Better seclude and take good care of half a dozen patients, as though of small-pox, than to have one outbreak of this costly pestilence. The public is always to have the benefit of the doubt. In 1884, Marseilles and the French government paid, the one a fearful, and the other a costly, penalty for this gross violation of truth and comity. The government lost enormously in life and repute. The Republic had its revenues seriously impaired by loss of trade and travel.

All Europe was frightened. Spain and Italy caught the infection, the latter suffering greatly. Just now the chief danger is in Spain. No one can foretell what will happen in six months. In March last one of the ablest authorities in Philadelphia told me that the chances of cholera coming to America were as three to eight. One of the most eminent surgeons in New York city said to me a day or two afterward that it might already be in the United States through rags and infected clothing, and thus cause epidemics similar to those of 1873 in Minnesota and Dakota.

However, we must, *per contra*, remember that since 1873 the public health movement, then in its infancy, has made most rapid strides. At that time we had no Board of Health in Nashville, and very few anywhere in America. Now every city and town of any repute in the Union has its Local Board. In the single State of Michigan there are twelve hundred such boards. Many States have efficient Boards of Health in each county, as, for instance, Indiana, such as we will soon have here in Tennessee. Again, almost every State in the Union has a State Board, with ample powers and funds sufficient for outlook and relief. At the head of all, the Federal Government by act of the last Congress, has a large special fund for epidemic emergencies placed in the hands of the President, with such provisions as really to constitute him chief health officer for us all.

Never, since the Asiatic pest first desolated the western world in 1830, *et seq.*, has such provision been exercised and such provision made to meet the danger. Hence, there can be no doubt that the danger of an invasion is far less than formerly, also, in case of an irruption, the entire country is prepared to meet the danger. There is no reason why, if it appeared next week in New York or in New Orleans, and a few weeks later in any interior city, it should not be controlled and speedily stamped out. There is no reason for alarm, but every reason for precaution.

As Health Officer of the city of Nashville, on page 93 of the Report published in 1877, I give my opinion very emphatically: "Cholera is no longer the pestilence that walketh in darkness. Modern medical science has shed a flood of light all about its pathway. If Nashville and other Tennessee cities and towns are ever again placed under terror and untold losses by this foul plague, nursed in oriental filth, an exotic wanderer, seeking congenial homes in this distant American land, it will be due alone to the culpable neglect of the public authorities, who only can guard the public health." To this opinion I still hold.

Its correctness has been demonstrated on a large scale by the foremost business nation in the world. The late Prof. George S. Blackie, well known throughout Tennessee, said, in an address to the Auxiliary Sanitary Association of Nashville, July, 1879, "Cholera itself is no more dreaded in the British cities. We remember when that disease was the dreadful incubus of Great Britain, when its approach was more dreaded than the plague of the Middle Ages, when, on its coming, the people fled in all directions, when, literally, grass grew on the streets of London, and the tumbrils rolled along the streets nightly to convey the day's dead to nameless graves. And now, what is the result of wise sanitation? The occurrence of

cases of Asiatic cholera in a city is heard of in its morning papers by its people, with no more interest or excitement than the news of a railroad accident, or the details of an outbreak among the savages of Borneo."

From Philadelphia, in 1776, proceeded the Declaration of Independence, now conceded to have marked an epoch in the world's history. From the same city, in 1796, and from the pen of one who signed that Declaration, came a prediction which to-day is thundered at the ears of rulers, both in Europe and America, by hosts of modern scientists. Dr. Benjamin Rush, in his famous "Essay on Summer and Autumnal Diseases," enunciated the fundamental propositions upon which is based the wide-reaching sanitary movement of to-day, and thus enables democratic America to claim the credit of inaugurating a measure of incalculable benefit to the great mass of humanity.

"TO ALL NATURAL EVILS, THE AUTHOR OF NATURE HAS KINDLY PREPARED AN ANTIDOTE. PESTILENTIAL FEVERS FURNISH NO EXCEPTION TO THIS REMARK. THE MEANS OF PREVENTING THEM ARE AS MUCH UNDER THE POWER OF HUMAN REASON AND INDUSTRY, AS THE MEANS OF PREVENTING THE EVILS OF LIGHTNING AND COMMON FIRE. I AM SO SATISFIED WITH THIS OPINION THAT I LOOK UPON THE TIME WHEN OUR COURTS OF LAW WILL PUNISH CITIES AND VILLAGES FOR PERMITTING ANY OF THE SOURCES OF MALIGNANT FEVER TO EXIST WITHIN THEIR JURISDICTION."

Unexpected events have retarded the progress of this volume through the press, and thus afforded an opportunity for an appendix, which can be made of great utility, if the public so will.

As observed, on pages 2 and 3 *ante*, I took hold of the responsible work of editing this Report with much diffidence. Frequent absence from Nashville, required by official or historical work, has prevented the close attention to revising the proof sheets which would otherwise have been rendered. Errors in proper names, will, however, be corrected in the index.

For nearly a year I have now had the honor of serving the State Board of Health, and must render to the members, singly and collectively, thanks for kind and considerate co-operation.

The duties of the position were assumed with the distinct agreement that a great historical work, which had been announced in 1882, and in which great numbers of Tennesseans were assisting, should

not be abandoned or retarded. This agreement has been adhered to. The work of the Board, so much crippled by inadequate funds, has been made efficient and of high order, by the gratuitous labors of its members, especially of its President. The Board can safely invite the closest scrutiny into its affairs, satisfied that the public has received a full equivalent for its cost. As an educating agency alone it has more than earned its living. A single epidemic of small pox prevented or stamped out in one populous county more than reimburses the public for the annual appropriation.

To the various railroad corporations passing through or having branches in Tennessee, I am under great obligations for uniform, courteous and liberal facilities in carrying out my laborious inspections. These corporations recognize the fact that Tennessee must be redeemed from the erroneous impressions produced by the prevalence of epidemics, especially the famous yellow fever scourges of 1878 and 1879, and that this can be done only by efficient sanitary measures under State leadership.

In small-pox epidemics of late the railroad help has been most signal in more respects than one. As mentioned on page 104 *ante*, the Illinois Central has set an example again commended for universal adoption by all railroads. In local sanitation about depots, in passenger coaches, and in freight trains, the railroads can institute a system of sanitation which, as an example to very many localities, and to thousands of people, would be most valuable.

Our warm and resplendent southland has all the elements of a paradise, but that it may be such, the one indispensable, though simple, requisite is **CLEANLINESS**. For want of this too many of our most favored cities have become synonymes for plague spots, and renowned the world over as oft smitten by pestilence. Cleanliness is more matter of law than of medicine. No one has a right to pollute the air that his neighbor breathes, or the water that his neighbor drinks, or in any way to prevent his neighbor from enjoying what nature freely gives to all. No one can keep his own premises filthy without committing all these trespasses against his neighbor. Hence, from the days of Moses until now, sanitary codes have figured largely in the legislation of civilized people.

To the medical profession of the State, which here as elsewhere, with entire disinterestedness, renders such necessary help to the cause of public health, my profound thanks are due. In every nook and corner of the State I meet my old students, and gladly recognize in them most active aids in applying those grand truths demonstrated in the lecture room to the improvement of daily living.

The educators of Tennessee owe it to their own immediate interests to be no whit behind doctors in promulgating sanitary science. Tennessee can rightly claim high rank as the University State of the South. At the close of the last, and in the early years of this century, the long extended east and west, ribbon-shaped territory of Tennessee became a receiving and distributing reservoir of populations. From the middle States, from Maryland and Virginia, and especially from the Carolinas, poured in a stream of as courageous, thrifty and noble people as ever walked the earth. They at once gave this State a name and fame of the highest order. Then they sent out an abundant flow to Louisiana, Alabama, Mississippi, Missouri, Illinois, Arkansas and Texas. What New England has been to the Northwest, such is Tennessee to the mighty Southwest. Throughout all its vast extent her euphonious name is spoken with reverence and affection as that of mother or sister. To-day the result is seen in the multiplied hundreds of ingenuous youth of both sexes who crowd the halls of her academies, colleges and universities. Let the educators of this commonwealth second with united voice the efforts of the State Board of Health and very speedily will Tennessee take the proud position for which her climate and capabilities so eminently fit her, as the home of a people whose wealth adorns and whose health proves fealty to nature's lavish beneficence.

J. BERRIEN LINDSLEY, M. D.,
Secretary and Executive Officer.

NASHVILLE, June 8, 1885.

ANALYTICAL INDEX.

BY
MARY M. LINDSLEY,
Of Nashville, Tennessee.



ANALYTICAL INDEX.

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